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MEDICAL AND EXPERIMENTAL  
I N Q U I R Y,  
INTO THE  
ORIGIN, SYMPTOMS, AND CURE  
OF  
CONSTITUTIONAL DISEASES.  
PARTICULARLY

SCROPHULA, CONSUMPTION, CANCER, AND GOUT.

(ILLUSTRATED BY CASES.)

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Quid nobis certius ipsis  
Sensibus esse potest, quo vera ac falsa notemus? LUCRET.

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## ADVERTISEMENT.

THE practice, which it is the object of the following Inquiry to recommend, has become diffused considerably beyond the sphere of the author's own observation. He will, therefore, consider it as an obligation conferred upon him by those who have adopted it, if they will have the goodness to communicate to him any observations, which they may think deserving his attention, particularly through the medium of their professional friends, who are, of course, the most competent to estimate its powers.

W. L.

London,  
King's Road, Bedford Row,

April 14th, 1805.



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## MEDICAL AND EXPERIMENTAL

### INQUIRY, &c.

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#### PRELIMINARY OBSERVATIONS.

BY CONSTITUTIONAL DISEASES I understand those which arise slowly and spontaneously, and concerning which we are hitherto ignorant, whether they are to be attributed to the operation of foreign and external causes, or to an original imperfection in the structure or functions of any of the different organs of the body. I intend not this as a logical definition. It will serve well enough to exclude from this Inquiry contagious fevers of all sorts. The comprehensive order of inflammatory fevers, ought, perhaps, to be included,

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since, notwithstanding that they are frequently excited by obvious external circumstances, the predisposition is formed before the attack, and may, therefore, be deemed strictly *constitutional*. But I wish principally to direct the attention of mankind to the extensive and melancholy catalogue of chronic diseases, towards the cure of which so little progress has been made by the labours of twenty centuries. I hope to show, that however diversified may be the forms and symptoms of these diseases, they may all be traced to the operation of a common matter, introduced into the system from without. This matter has its origin from the decomposition of animal, and, perhaps, of vegetable bodies. It is probably to be found in a great variety of forms and modifications, with which I do not pretend to be intimately acquainted. As it is of a deleterious nature, and has hitherto escaped observation, I take the liberty to designate it generally, by the name of SEPTIC POISON. To lay the foundations on which these



Opinions are built, is the principal object of this Inquiry. If it be true, it leads to a practice, which may be expected to render these diseases frequently curable, and which may, perhaps, ultimately eradicate them. The practice itself is extremely simple, and has often been proposed as a subject of experiment, but has never, as far as I know, been fairly and fully tried. It is principally dietetic, but does not exclude any aid, which can be given to it by medicine. I shall detail, therefore, in the course of the Inquiry, the effects I have experienced from the proposed method, effects, which have corresponded with the most sanguine hopes I have been induced to form of its efficacy:

The fluids, which are so abundantly introduced into, and diffused through the whole system, are the chief vehicles of the suspected matter. If these fluids are essentially inert, and are to be looked upon merely as diluents, we are justified in paying little or no regard to them in

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medical practice. If, on the other hand, as they are commonly presented to us, they are essentially and perpetually active, it surely behoves us duly to appreciate the effects of this activity, and to determine whether it be salutary or noxious. In a recent publication\*, I ventured to oppose the authority of CULLEN, who has alleged, as I think, upon very feeble grounds, that little nicety is necessary in the choice of common waters, and that the apprehension that any of them could produce any peculiar diseases, is absolutely destitute of foundation. I was, at that time, unfurnished with any direct experiments to establish the opposite opinion, but I ranged myself on the side of the prevalent notions of the bulk of mankind. This opinion receives so strong a colouring of probability from this very circumstance, as to make it a matter of some astonishment, that, in an age

\* RESEARCHES into the PROPERTIES of SPRING-WATER, &c.—JOHNSON.

distinguished for science, so little pains have been hitherto taken to refute, or to confirm it, by full and unexceptionable evidence. The popular sentiment is supported by the authority of the father of medicine; it has been current from his time, through a long succession of wise physicians, and it is not without the sanction of very grave and respectable names of our own days. When we consider the different salubrity of different places, the phenomena of endemic diseases, the remarkable unhealthiness of particular families, the unexpected and astonishing cures sometimes effected by change of residence—when we consider these and similar facts, which are perpetually occurring, we cannot but acknowledge our profound ignorance of the secret springs, which operate such extraordinary effects, and lament the little progress that has been made in those parts of knowledge, which are the most intimately connected with the well-being of our species. A part of this ignorance is to be attributed, not

merely to the difficulty of the investigation, but also to the supineness and inattention of the persons best qualified to undertake it. What a strange infatuation has possessed the minds of scientific inquirers! There can hardly be found a pebble, which has not been tortured in furnaces of the chemists, and the composition of which has not been unfolded by a thousand experiments; whilst the matter, which is applied to human uses, more abundantly than any other, has been hardly noticed, or, at best, has received the most careless and superficial examination. As the relations of things known, with those which remain unknown, are infinite, all science is, undoubtedly, connected by some links, with the increase of human happiness, and merits the most careful cultivation; but those branches demand, surely, the first attention, whose relation to this great end is broad and obvious and acknowledged, and from the improvement of which we may have a chance to ascertain the sources of life and

death, of the pleasures which enliven, and the evils which embitter our existence.

If the origin of the sufferings of mankind cannot be discovered in the operation of the matters, which are applied to the human frame, and particularly of those, over the composition of which we possess a considerable extent of power, it is to be feared, that the condition of the race must be considered as utterly hopeless. There is a large tribe of diseases, which have, in all ages, proved entirely unconquerable by medicine. Though individual instances of these diseases have occasionally seemed to yield to the powers of art, the remedies which have been thought successful, have been found almost always unavailing, when repeated in circumstances, which have appeared perfectly similar. Thus have these rare and fortunate events served to evince the force of nature and the feebleness of art; and rather to excite a well-founded hope of a



more happy futurity, than to afford a steady light for the guidance of the rational physician. He has been doomed, in these painful circumstances, to trace the tiresome circuit of an empirical practice, unless his disgust or his integrity should prompt him to renounce all attempts at relief, and to leave the sufferer to his fate, and the confiscations of impostors.

In the search after remedies, the treasures of nature have been exhausted by the experiments of benevolence, or the audacity of empiricism. The quantities of the matters exhibited, the forms and the combinations have been infinitely varied, but still to no purpose. The Herculean diseases, those that baffled the art of HIPPOCRATES, have almost all of them preserved, even to our own days, their characteristic obstinacy, and continue the opprobrium of medicine. Such are Pulmonary Consumption, Gout, Cancer, Mania, Epilepsy, and even many Cutaneous Eruptions.

But it is well known, that the greater part of these diseases are the offspring of civilization, and, in some unknown manner, connected with the arts, which are essential to this condition. Savage man is almost entirely exempt from their dominion, and he seems to possess a frame, in many points, physically different from that of man in that degree of cultivation, to which he has hitherto arrived. In proportion as he emerges from his primæval state, do these furies advance upon him, and would seem to scourge him back into the paths of nature and simplicity.

Much is attributed to the refinements of our manners, and the delicacy of our habits; to intemperance, to repletion, to heat and cold, and to the influence of the passions. Doubtless, each of these causes has a powerful operation on the human frame, whether in its sound or in its morbid condition. But it may fairly be questioned, whether any of them be sufficient of itself to produce the effects

attributed to it, unaided by some other more powerful cause, hitherto undiscovered and hardly suspected. For individual instances of these incurable diseases happen daily, in which none of these circumstances are known to have acted with peculiar energy; and, on the other hand, numbers escape them, from whose habits we should be led to expect their occurrence, were these causes alone adequate to their supposed effects. No axiom is more evident, than that effects are proportionate to their causes; including, in the latter term, the time during which they operate. In the cases under consideration, such proportion cannot be perceived. Can then the circumstances assigned be esteemed any other, than exciting causes, acting on bodies predisposed to diseased motions or actions?

A little attention may convince us, that it is not man only whose frame has been injured by civilization. All the animals which have approached his habita-



tion, or have been reduced under his dominion, have also partaken of his misfortune. The domestic fowl acquire a morbid delicacy, so that the greater part of the young frequently perish. The horse, as he seems to partake much of the disposition, and to possess many of the passions of his rider, has likewise the greater part of his diseases. Like him, he is subject to inflammations, fevers, consumption, tetanus, and other maladies, very nearly resembling those of the human subject. Here mental causes, to which we are apt to attribute so much in the generation of human infirmities, are necessarily excluded. Nor can even luxury be justly charged with these dreadful consequences, if taken in the sense, in which we apply this term, to the diet and habits of mankind.

Still we cannot but apprehend, that the motions of material systems are principally dependent upon material forces, and, therefore, that the principal agents

in these wonderful phenomena, may be rendered the objects of our senses. If so, is it not possible to avoid them? Can the evils of social life be escaped only by renouncing its advantages and by returning to barbarism? This question is certainly the most important that can be proposed to human wisdom. I will not venture to assert, that it may be answered in the affirmative. But my senses and my understanding have utterly deceived me, if a very great improvement may not be made in the condition of man, and particularly in the treatment of some of the diseases, which have been hitherto the most intractable, by a greater attention to the composition of his diet, and especially by avoiding the application of deleterious and poisonous matter, daily introduced into the system, perhaps in many ways, but, principally, and most abundantly, under the attractive and unsuspected form of WATER.

WATERS are divided, by chemical

writers, into two great classes, the *economical* and the *medicinal*. The former (it is with these only that we have any concern in this place) being such as are commonly applied to domestic purposes, have been supposed to contain nothing more, than very minute quantities of well known salts. As these salts, when taken internally in moderate quantities, produce no bad effects on the body, they are deemed, and it would seem very properly, to be nearly inert and wholly inoffensive in the very diluted condition in which they are thus received\*. Such being the doctrine of chemists, the most eminent in their art, it is not at all surprizing, that physi-

\* “ 1. *Snow water* contains a little muriate of lime, and slight traces of nitrate of lime.—2. *Rain water* has the same salts in a larger quantity, also air and carbonic acid.—3. *Spring water* has most frequently carbonate of lime, muriate of lime, muriate of soda, or carbonate of soda.—4. *River water* has the same principles, but in less abundance.—5. *Well water* contains, besides the above named salts, sulphate of lime or nitrate of potash.”—Such is the doctrine of BERGMAN, quoted and sanctioned by FOURCROY. See his “*Système des Connoissances Chimiques*, tom. iv. p. 302.”

cians have, in general, entertained little or no apprehensions from the indiscriminate use of the *economical* waters; and that, whatever may be the suspicions of a few of the most judicious, their apprehensions have been too vague and too little supported by experiment, to have had any influence whatever upon the practice of the profession or the habits of the public.

In the numerous experiments which I made on a great variety of common waters, with the view of determining whether, having been in contact with lead, they contained any of the metal in solution, I could not but perceive this general account of their contents to be very imperfect, and felt no small degree of astonishment at the negligence, with which the subject had been treated. But though convinced that many waters possess metallic impregnations, which elude detection by the ordinary methods of examination, I felt only a vague apprehension, that this might render them not entirely

salubrious: still less had I the smallest suspicion, that any matter might be extracted from them of a deleterious nature. The following circumstance incited me to attempt a more full and laborious investigation of the properties of common water, which has convinced me, that it is to be reckoned amongst the substances, which have the most direct and powerful influence on the animal economy, both in health and in disease.

A lady was occasionally afflicted with very severe pains of the stomach, when she lived at a particular house, which had repeatedly left her upon changing her residence. Unable to account for this circumstance, she requested me to examine the water used by the family. It was well tasted, but it had been observed to make the teeth dark. I used the methods I have described in another place for the detection of metallic matter, but to no purpose. Not being able to divest myself of the suspicion, that some noxious sub-



stance must be contained in this water, I evaporated a small portion of it to dryness and tasted the residuum. Now I observed that, though it hardly impressed the tongue with any other taste than the bitterness of the deliquescent salts, there was a peculiarly disagreeable sense of constriction excited in the fauces, which remained there fixed for a long time. The impression was clearly metallie. Though my mind revolted at the suspicion, I thought I perceived a strong resemblance between this impression and that excited by arsenical salts. I washed out the deliquescent matter, and put the remainder, mixed with a little charcoal powder, between plates of copper, which I exposed to a red heat. The copper received a white stain by this process. A little arsenic was exposed to the same treatment between similar plates. No difference could be observed between these stains in each experiment, unless that the impression made by the residuum of the water, was the more distinct of the two.

Thus was a great degree of probability added to the suspicions I had previously entertained.

Amazed at a result, so strange and unexpected, a croud of reflections could not but rush upon my mind. What! is it possible that human beings can be daily swallowing the most virulent of poisons, without suspicion and almost without complaint? Those who have resided at this place have not been singularly unhealthy, and some have arrived at the ordinary period of old age. The fact then cannot be solitary. Is not this the very dæmon, which, for so many ages, has tortured mankind; and which, usurping the sensorium, has corrupted, under a thousand forms, both the mind and body? the evil spirit, which has augmented the wants of man, while it has diminished his enjoyments? which has exasperated the passions, inflamed the appetites, benumbed the senses, and enfeebled the understanding? which has converted his fine form

into a storehouse of diseases, has blasted the flower of his offspring, and has brought even the strongest of his name to an untimely grave?

Several observations occurred, sufficiently rude and vague indeed, but which strengthened, in a degree, my suspicions of the activity of this unsuspected fluid. I knew a poor family which was very unhealthy; the mother and one daughter had died consumptive within a year; the father followed soon after, before he had completed his fiftieth year; his disease was dropsy, the consequence of unsound viscera. The residuum of the water used by this family, left the same constriction in the throat, and was very acerb.

The lady, whose case is related in another place\*, furnished another observation. Though, as is there related, she became perfectly free from the spasms of the stomach and swelling of the abdomen,

\* See RESEARCHES, &c. Case iii, p. 109.



generated, as I believe, by a saturnine impregnation of the water she was daily using, her health continued obviously worse at her own house than at other places. In London, during the spring 1802, she was absolutely without complaint, except the reigning influenza : but, on her return to her usual residence, she began to suffer heat of the stomach and heartburn, sick head ach, and an apthous mouth. The water used by her had the same acerbity and astringency as that last mentioned\*.

Another occurrence afforded a more striking instance of the activity of common water on the system. A young lady,

\* Waters which have an evident stypticity, of which there are many, have been called *aluminous* waters; but they have never been proved to contain any aluminous salt, and as almost all hard waters hold in solution acrated lime, it seems impossible that they should contain alum, which the lime would decompose. The astringency of these waters is from some other matter, and I suspect that all our common waters would seem astringent to those who confine themselves to using distilled water. At least, I know this to be true in one instance.

who had habitually used water, which had been kept in contact with lead, in consequence of the alarm she received from my late publication, changed it for that of a common pump. Much to her disappointment, she found that pains of her stomach, with which she had been much afflicted, were very sensibly aggravated by this change. She had then recourse to the water she had formerly used (that of a running stream), taking it directly from a pool. In four days time the stomach was greatly relieved, and a hot pimply eruption on the face, which had also been much aggravated with the stomach pains, began to fade, even within a shorter time\*.

Impressed with the interesting conse-

\* I would not be understood, that this or any disorder can be speedily cured by a change of water, but, merely, that a sensible alteration may be quickly observed in the countenance, and, therefore, in the state of the circulation. It will be found, that no change in the habits of life is more quickly and sensibly felt than the change of water; but, on the other hand, that nothing is more gradual, than the constitutional alterations introduced by the change.

quences of these observations, and especially with the light they might be expected to throw on the generation and cure of many diseases, I have attempted to gain, by experiment, a more intimate knowledge of the substances, which impart, to common water, its apparent activity. This attempt has led me into a field of investigation, in which I have been long bewildered, and, at times, despaired of obtaining any satisfactory results; but, at length, by the aid of synthetical experiments, I feel myself justified in offering the following conclusions, which, doubtless, are very imperfect, but which, I am persuaded, are essentially well founded.

1. Common water gives products much resembling those which are derived from animal matter. It is probable, therefore, that it has received a taint from this matter in a state of decomposition, or, in other words, from *putrefaction*.

2. The metallic basis of the matter,

which contaminates common water, exactly resembles *arsenicated manganese*.— These metals unite in a great variety of proportions and different degrees of oxygenation. They form the basis of the matter which I have denominated Septic Poison. With the other principles I am not correctly acquainted, but they must be those which are common to animal matter. I have hitherto been foiled in every attempt to separate this compound into its constituent principles, whether it be made artificially or be found already formed.

3. The same compound enters into the composition of animal matter. I have found it in the coal, which remains after the distillation of animal substances, and the ashes to which this coal is reducible by incineration.

4. As all animal matter is derived from the vegetable kingdom, the same substance must enter likewise into the composition

composition of vegetable matter. It may be readily detected in the ashes of pit-coal, and, I doubt not, in common vegetable ashes.

In a word, then, the decomposition of animal, and, perhaps, of vegetable matter, that is to say, *putrefaction*, I believe to be the great instrument of the destruction of the human species. By this process a matter is developed, which becomes a true and proper poison to the human body. Different systems and different organs of the same system are imbued with different degrees of resisting or conservative force. Hence the great body of the race perish prematurely, each at his appointed hour, but with phenomena infinitely varied, according to the varieties of the organs principally affected, the periods of life and the constitutional peculiarities of every individual.

I have said, that water is the principal vehicle in which this Septic Poison is conveyed into the system. The proofs of



this and of the other positions, I think it better to throw together at the end of the Inquiry. Taking it for granted in this place, let us consider, that from the creation of mankind, the earth has been more and more covered with animal exuviae. Whatever, therefore, is soluble, of these exuviae, must necessarily impregnate that fluid, which percolates the whole surface, and in which the soil is, as it were, infused and macerated. The arts of cultivation, in populous and civilized communities, have increased and diffused the evil, and the seeds of abundance and of destruction are sown by the same hand. This immense mass of animal *exuviae*, I presume then, to be the grand storehouse of pestilence, which, by the intermedium of water, operates uniformly and incessantly, and undermines, indiscriminately, the strength and stability of the whole society. If similar matter be directly applied, it may be expected to be still more deleterious. Thus I suspect that putrid meat, musty bread, and, in short,

every article of diet approaching to corruption, is also a true poison to the human body. But as such matters are received only occasionally and reluctantly, from the disgust which they naturally excite, the effects of them are hardly perceptible in the ordinary circumstances of life. On some occasions, however, those effects become sufficiently obvious. Such are seasons of scarcity or dearth, when, probably, far greater numbers perish from the bad qualities of the provisions than from absolute want.

Such being the short and simple view, which I have been induced to take, of the origin of Constitutional Diseases, it must follow, that if there exist any method of preventing their fatal termination, it must be founded upon one of two principles, or upon a combination of both:—1st. By the application of substances which have the power of counteracting the poisonous matter; and 2dly. By a regimen which will exclude, as much as possible, the in-

troduction of new matter into the system. The first comprehends the medical treatment, properly so called, the imperfection of which, however beneficial it is in numerous cases, and necessary, even when it fails to cure, I need not dwell upon any farther. The second method has hitherto been wholly neglected, since the origin of our diseases has been so imperfectly understood, or, rather, has been involved in the most profound darkness. If it has been practised at all, it has been accidentally and incompletely, by the resort of invalids to springs, supposed to be endowed with peculiar powers; but, in truth, distinguished only for their purity. The most essential part of this method consists in the use of fluids that are absolutely pure: the water, in particular, which is the basis of almost all the fluids we use, must be freed, by distillation, from every foreign contaminating matter. This, indeed, is so important, that by an attention to this point alone, a stop may be put to the progress of the most contumacious



diseases; and in this assertion I am justified, by instances of benefits received in such cases, not, indeed; very numerous, and most of them still only in the progress of amendment, but too strongly marked to permit the the suspicion of error or deception\*. The only additional precaution I have much insisted upon, is the very sparing use of salt and salted meats. Solutions of common salt present appearances similar to common water; and the use of meat preserved by salt, is, at least, very suspicious.

\* It may be asked, whether rain water may not serve as well as distilled water, as it is certainly free from all the *fixed* principles of spring water: But I suspect that there are *volatile* principles, which are injurious to the human system, as well as those which are fixed. The water which rises first from rain water, by distillation, is most offensive to the stomach. Rain water deposits a matter, from which it receives a peculiar taste; this matter has been called carbonaceous, but it has not, I believe, been duly examined. Above all, rain water is a great fertiliser, which property it must owe to putridity. It receives all the putrid effluvia, which are constantly exhaling from the earth, and itself readily becomes putrid by stagnation. For all these reasons, I consider it to be essentially different from pure distilled water.

Milk, I have allowed, whether taken entire, or in the form of whey, buttermilk, or any other preparation, which may make it more easy to the stomach, or more grateful to the palate. I have, of course, forbidden beer, porter, and all liquors, the basis of which is common water, but have permitted fermented liquors, formed from pure vegetable juices, such as cyder, perry, and good foreign wines, used in moderation. I have not even forbidden pure spirits, as rum, brandy, &c. diluted with pure distilled water. Not that I regard fermented liquors of any kind to be salubrious *per se*; but it cannot be denied, that, in many cases, they are useful and necessary to our habits. I believe the true foundation of their utility consists, in checking the disposition to excessive secretions, and thus acting as a species of tonics. A great advantage of changing the nature of the fluids, as I propose, is, that we may, by this method, gradually discontinue the use of fermented liquors, without the smallest detriment to the health or spirits.

This is the simple plan of diet which I have been induced to recommend, and believe it to be adapted, and, indeed, the only one adapted to chronic diseases of every sort. I cannot expect that the practice and the principles on which it is founded, will be received and adopted on my single authority; doubtless, they will be treated by the majority with suspicion and incredulity, by numbers, probably, with ridicule and contempt. I must appeal from the decision of the many to the judicious few, and say to the scientific inquirer especially, “*Fiat Experimentum.*” Let me urge too, in behalf of a treatment, that at first view may appear nugatory, from its very simplicity, that it can interfere with no medical treatment, that it imposes little constraint, and that it is adapted to every regimen.

To remove, in some degree, the prejudices naturally attached to whatever is sanctioned by custom, let us inquire, for moment, whether there are not well known

facts in favour of the doctrine I wish to establish.

Now that our diseases, particularly that our chronic diseases are occasioned by errors of diet of some kind, all the world readily presumes. Our English HIPPOCRATES has expressed the popular sentiments, by declaring, that “as acute diseases generally proceed from God, so do chronic ones from ourselves\*,” that is, from errors in diet principally. The kind of solid aliment has been diversified in every possible way, and an abundance of restrictions have been imposed with regard to the liquids allowed, hitherto with how little success, I need not say. If, then, this whole doctrine of the importance of diet be not completely erroneous, I see not that there remains any object on which to rest our suspicions, except it be the water in common use.

Stomach complaints, under various de-

\* SWAN'S SYDENHAM, p. 347.

nominations, affect so much the whole community, that an individual can hardly be found, at least, one who has past the meridian of life, who is exempted from them. In almost all chronic diseases, the digestive and assimilating powers are greatly impaired and finally destroyed. But if such diseases were the consequence of a natural imperfection or debility of parts, why should the stomach be more constantly affected than any other viscus, the liver, for example, or the spleen or the kidneys? From hence it is surely probable, that the popular opinion is well founded, and that some matter is constantly introduced into the system, together with the *ingesta*, which destroys the tone of the stomach, and so, through the medium of this important organ, gradually undermines the system.

If the universality of custom be thought an evidence of the common experience of mankind, in favour of the innocence or salubrity of the custom, the universal pre-



valence of disease, the origin of which is unknown, may be adduced as a proof of the uncertainty of this pretended experience. The drinkers of water are so far from having the smallest exemption from the common lot, that they seem liable to some complaints almost peculiar to themselves. They are subject (even those whose habits are temperate) to hot and pimply eruptions on the face, more than beer drinkers. Probably some of the Septic Poison of the water is precipitated by boiling, and some, too, may be neutralized by the bitter of the hop, and so rendered less noxious. Very hard water also is unfit for brewing, which may be another reason why beer is, on the whole, more wholesome than water. Further, it is notorious, that punch, that is to say, ardent spirits diluted with water, is much more unwholesome than wine. Numbers of those, who indulge much in its use, become dropical, long before the period of old age. As the alcohol is the same in each liquor, this difference in their effects

on the constitution seems utterly inexplicable, unless we admit, in the one, the pernicious effects of the watery vehicle, of which the other is destitute.

Ireland has been said, by a celebrated writer\*, to supply this metropolis with a race of the finest women and the stoutest men, which are known in the world. The children of the Irish are mostly fed upon butter milk and potatoes. In Lancashire, a county famed for beauty, the same diet is much in use. A judicious observer has told me, that the finest family of children he had ever seen, was that of a very eminent surgeon of Liverpool, and that this family adhered very strictly to this diet. To what can the superior salubrity of this diet be ascribed, if not to the purity of the fluid supplied by the butter milk? For any solid aliment whatever would supply an equal *quantity* of nutriment. Potatoes and water would

\* ADAM SMITH.



certainly afford a very imperfect nourishment. I know not that the experiment has been tried, but no one can doubt the fact, who observes the condition of our own labouring poor, particularly the women and children. Their principal diet is bread and tea, of which the tea may be considered to be essentially the same as warm water.

If we consider common water as absolutely devoid of activity, we should be apt to imagine, that whey can have no medicinal power, except conveying into the system a small quantity of nutritive and saccharine matter in a watery vehicle. But, on the contrary, persons feel a very sensible lowness from its use; and it is universally allowed to be cooling. This is much the same as to say, that common water is heating; for the lowness can be no other, than the effect of the abstraction of an accustomed stimulus.

How, indeed, can we account for the

emetic power of warm water, if it possess not an essential activity? What is its nauseous taste, but the natural impression of its constituent principles, when the sensibility of the organs is increased by warmth? If distilled, it is not made at all offensive by warming. When cold, habit has made it to us either insipid or agreeable. But see animals smell it, taste it carefully, and, after this examination, often turn from it with disgust. It evidently corrugates the skin. Can we wonder, then, that it should affect the internal coat of the stomach, which is, perhaps, the most sensible membrane of the body?

The springs of Malvern have proved an efficacious remedy for many obstinate and deplorable diseases, which have resisted the powers of the most useful and appropriate medicines. They have proved very useful in scrophulous cases, in inveterate ulcers, and sores that have been called fistulous; in obstructed and schirrous glands, and some that approached to the

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state of cancer; in disorders of the eyes and eye-lids; in nephritic complaints and disorders of the urinary passages; in cutaneous diseases; in coughs from a scorbutic and serophulous cause; in loss of appetite, and in immoderate evacuations in the female sex. Such is the testimony of Dr. WALL, a physician of great celebrity and unquestionable veracity\*. His evidence has been confirmed by the successive experience of some of the first of the profession; and I know, that at this day, these springs are recommended as a dernier resort, in the most deplorable cases, by one of the most eminent physicians of the metropolis†.

But the most careful analysis has not been able to detect, in the Malvern Water, any active ingredient whatever, to which medicinal powers can be ascribed; it is

\* See WALL's Treatises on Malvern Waters, published in 1756, 1757, and 1763; or WALL's Tracts, republished by Dr. MARTIN WALL.

† Sir FRANCIS MILLMAN.

no more than the uncontaminated element, nearly approaching to the purity of distilled water. As it is, therefore, absolutely destitute of all proper and peculiar medicinal powers, the benefit derived from its use can be attributed to no other cause, than to the cessation of the constant and habitual application of noxious matter, contained in the water of common springs. When the morbid force is removed, the innate powers of the system are developed and become active, and thus is the body gradually restored to the actions and sensations of health. It is of consequence to observe, that the diseases, in which the pure waters of Malvern have proved beneficial, have no characteristic resemblance, and have not been in the least suspected to be the progeny of a common parent.

The medicinal powers of springs, remarkable only for their purity, have been observed also upon the continent. At Schleusingen, a town in Hennebergh, a principality of Franconia, are such waters,

famed for their utility in chronic diseases, particularly in calculous complaints, in arthritic, rheumatic, and scorbutic affections, and in cases of muscular debility. Near Osterode, a mine town in the Hercynian forest, is a fountain of great celebrity, in which not a particle of mineral ingredients can be detected. Within two miles of Halle, at Lebeg, a spring rises out of the rocks, the water of which is pure and imputrescible. A beer is made of this water, which is used as a medicine, of great efficacy in nephritic cases and in inflammatory habits. Some springs, formed by the melting of the snow on the Rhætian Alps, have been found to possess similar virtues. At Pisa, Tettucci, and Nocera, in Italy, there are also medicinal springs, of great celebrity, which, like our Malvern wells, are destitute of all active ingredients\*.

A curious error of sensation often happens on entering upon a course of the Malvern waters, and still more strongly

\* Hoffmanni Opera, tom. v. p. 206. Fol. Genev. 1740.

upon the first use of distilled water. They seem to have a metallie taste, and this is often so remarkable, that persons cannot be persuaded, that the water has not contracted some metallic impregnation from the worm of the still\*. In a short time this sensation vanishes, and the water, if it be free from empyreuma, becomes insipid. Let us consider for a moment, how this erroneous judgment is occasioned. What we call water, is really a compound fluid, having a considerable degree of natural stypticity, but which from habit has become nearly insipid. This can only be effected, in sound organs, by the sensorial motions excited by the fluid, and propagated from the mouth, fauces, and œsophagus to the brain, being balanced

\* This metallic, or brassy taste, is often observed to arise spontaneously in disease. I lately had an example of it in a lady, who died from a disease of the stomach.—  
*“Viro cuidam,”* says HEBERDEN \*, *“qui nunquam hy-*  
*“drargyro usus fuerat, omnes cibi, quoscunque caperet,*  
*“visi sunt inquinari sapore aris adeo nanseoso, ut omnia*  
*“fastidiret, et corpus viresque amitteret.”*

\* HEBERDEN *Commentarii*, p. 240.



by equal motions in an opposite direction. The position of the mind itself, the very thoughts of water, are the efficient cause of the opposite motions, propagated from the sensorium to the organs of deglutition. Thus is the mind quiescent, or, in other words, the fluid seems insipid. But when the water applied is really pure and void of stypticity, the balance is destroyed, so that one force continues active after the opposite force has been removed; the motions excited by the position of the mind are continued, but are no longer counteracted by the motions excited by the stypticity of the fluid. In consequence, the former motions are attended by their appropriate sensations, which appear to be those we term metallic astringency\*. In

\* If these principles are just, we see how erroneously we are apt to suppose substances, which are insipid, to be, for that reason, void of stimulus;—we see the mechanism of nature, in reconciling the mind to matters originally disgusting;—and we see how there may be great derangements in the condition of the most important viscera, without pain or any sensations, which may lead us to the knowledge of the organ principally affected. Indeed,



the one instance, the truth of this was extremely clear, for this sense of constriction actually took place, and that repeatedly, even before the fluid was applied to the palate, whilst the cup was approaching to the lips. This phenomenon imitates closely the genuine symptoms of Hydrophobia, and gives us the clue by which to unravel the symptoms of that curious, and, hitherto, inexplicable disease.

Many other facts might be adduced of a similar tendency; but these may be sufficient to disarm prejudice and awaken suspicion. I proceed, therefore, not without much diffidence, to hazard some opinions on the effects of common water on the system, and such practical inferences as may be naturally deduced from them.

In considering these effects, I lay it down as proved, that the Septic Poison is truly of an arsenical nature, and conse-

these diseases are by far the most intractable, in which no local affection can be discovered, as often happens in Mania, Melancholia, Epilepsy, &c.

quently, that the symptoms are of the same kind as those produced by that mineral, however inferior in degree. Nor will this appear in the least surprising, if we bear in mind, that some preparations of this mineral are absolutely inert, and that, therefore, it may readily be presumed to act with degrees of virulence, infinitely various, according to the form in which it is applied. In the case before us, its activity is reduced by the form of combination in which it is found. It is not introduced as a pure mineral, but as an animalized substance, the basis of which is metallic. Still, however, its activity must be principally due to the arsenical part of the compound, and, therefore, we may be allowed to reason from the known effects of the most active ingredient, in investigating the probable effects of the compound.

This metal has been most commonly received into the stomach, in the first degree of acidification, a condition in which

it is called *arsenious acid*, or *white arsenic*. In the metallic form, some have thought it inert, though still highly dangerous, it being easily convertible into an oxide or an acid. When completely acidified (in which state it is called *arsenic acid*), it is also less active. In every condition, whether it be active *per se*, or be rendered so by the animal fluids, the effects are uniform, so that we may consider the effects of white arsenic, as the genuine operation of this poison.

If white arsenic be taken in a quantity, sufficient to destroy suddenly, or to greatly endanger life, it produces inflammation, ulceration, and gangrene of the stomach, and what may be considered as a sphacelation of the whole system, indicated by a destruction of the tone of the fibres, a consequent swelling of the whole body, or of different parts, and by the blood being deprived of the property of coagulating. These are the regular consequences of excessive excitement, or of actions

#### 44 PRELIMINARY OBSERVATIONS.

which completely exhaust the vital powers. Those who escape immediate destruction are frequently reserved only for a more lingering fate, and sink after an illness of a few months, or sometimes of two or three years. The constitution has less powers of restoration after suffering from arsenical poison than from others. The composition of common water enables us to explain this apparent imperfection of the system. At the same time it evinces the propriety of using in these cases whey, milk and oily matters, in preference to watery liquors; and of making them a principal part of the diet, during the convalescent state.

Medicine has conspired with accident to increase our knowledge of the operation of this substance upon the body. It has been used, and sometimes with much efficacy, as a remedy for intermittent fevers, periodical pains of the head, cutaneous diseases, and in other cases. When taken with this intention, and in very mi-

nute quantities, the sensible effects have been found to be similar in kind to those already described, though, of course, much inferior in degree. It irritates and inflames the parts to which it is applied, and so causes heat, pain, or uneasiness of the stomach, with nausea, vomiting, griping, and purging. It increases the secretions, and irritates the secretory vessels, through which it passes. Thus it excites strangury in passing through the kidneys and bladder, and an eruption, like nettlerash, on the skin; the face swells, and sometimes other parts of the body. When its use has been continued too long, and sometimes even when managed with great precaution, it has done much essential and permanent injury, and that of different kinds in different subjects. Hectic fevers, paralytic weaknesses, tremors and dropfical swellings, have been the most common forms of subsequent disease.

All these phenomena prove, that the



primary action of this substance is that of an universal stimulant, exciting into increased and preternatural action every organ to which it is applied. And when we consider the very minute quantity which is adequate to extraordinary effects, that the thirteenth part of a grain, or less, after a few repeated doses, has cured the most obstinate intermittents, we cannot but deem it the most powerful of those with which we are acquainted, and perhaps of all that exist in nature.

I suppose then the Septic Poison, conveyed by common water, to occasion an habitual and preternatural excitement of all the moving and sensitive fibres of the bodies, to accelerate the circulation and increase all the secretions; and as a more abundant nutriment is necessary under these circumstances to the support of the body, to increase, perhaps, indirectly the appetite and digestive powers. And in this manner, I presume that many phenomena of health may be accounted for,

which are otherwise inexplicable; and thus may diseases be traced to a common origin, and be made to yield to a common treatment, though their symptoms may be infinitely varied, by reason of original differences of the constitution, or varieties in the form and quantity of the morbid matter.

In some systems, happily constituted, in which the conservative powers are very great, and uniformly diffused over all the organs, this preternatural excitement may not occasion any apparent disease; but it is inconceivable, that any morbid force should continue perfectly inert, if constantly applied. It may therefore be fairly questioned, whether, in every subject it does not accelerate the period of old age; and whether it has not been a powerful instrument in preventing the race from attaining to that longevity, for which nature seems to have destined it, and to which, as we are informed by tradition, it arrived in the primitive ages of the world.



In others, this increased excitement would appear to lay the foundation of that condition of the system, which has been termed the *phlogistic diathesis*, and to shew itself upon the application of occasional exciting causes in the form of Inflammatory Fever. The subjects of this affection have often the appearance of perfect health, or are even more than commonly robust. The diseases of such persons; it is usual to attribute to *plethora*. But, if I mistake not, this plethora is itself the effect of the artificial introduction of stimulant matter into the system. In that large tribe of diseases, called inflammatory, the uniform appearances of the constitutional affection, however various may be the local symptoms, and the relief experienced in all the diversities of the symptoms by an uniform method of treatment, strongly point out the operation of a common cause influencing their production. Nature alone is frequently adequate to the cure of these diseases. This she effects by destroying the appetite, and increasing the secretions;

thus is the plethora succeeded by inanition, and the consequences disappear as the cause is removed. There is probably also, a change effected in the composition of the blood, by the process of fever, though in what it consists we are unable distinctly to describe. Medicine too is, in these cases, of very great efficacy, when judiciously directed to second the efforts of nature, to limit her excesses, supply her imperfections, and correct her aberrations\*.

\* This account of the generation of diseases, has not the misfortune or the recommendation of novelty, so much as may at first sight be imagined. MORTON (whose sagacity no one acquainted with his works will deny) grounded his whole doctrine upon a similar hypothesis.—“ In statu præternaturali,” he says, “ spiritus animalis, non secus ac massa sanguinis, *fermento peregrino* inquinatus, morbosum characterem recipit. Ex quo non tantum morbi cephalici, uti Apoplexia, Vertigo, Lethargus, Coma, Epilepsia, Convulsio, Mania, Melancholia primaria, verum etiam Incubus, Hysterica Passio, Affectiones Hypochondriacæ, Paralysis, cæterique morbi generis nervosi, immo et febres cujuscunque generis, Variolæ, Morbilli, Scorbutus, et generaliter loquendo, omnes morbi sive Acuti sive Chronici generantur, &c.” MORTON Opera, Pyretologia, p. 5. Genevæ, 1727 —Again “ Febris

In the application of medicines to the cure of inflammatory diseases, there seems little room for improvement. But I cannot but think, that the treatment would be oftentimes more successful, by substituting whey, butter-milk and *pure* water (by which I always mean *distilled*) for all liquids impregnated with the Septic Poison. This is of the more consequence, as the principal part of the aliment is of necessity confined to liquid matter. Where I have applied the principle, I have thought it shortened the progress of the disease, and alleviated the violence of the symptoms; and in some instances of great severity, it has appeared to preserve the life of the patient. But such cases are not a proper subject for detail, since it is hardly possible to impress upon others the same persuasion which you feel yourself of the degree of danger, to which a patient is ex-

acuta in genere est calor præternaturalis in sanguine accensus a spiritu animali, *miasmate quodam deleterio contaminato*, &c. ib. p. 20.

posed, in diseases which have frequently a natural termination in recovery.

No one doubts, that by the abuse of wine, or of spices, or of opium, a mild inflammatory fever will be greatly exasperated, and perhaps be rendered fatal. In these affections, a very powerful operation is produced by a quantity of stimulant matter, too small to have any perceptible influence in health. A single glass of wine, for example, will occasion head-ach and accelerate the pulse, as much as a bottle in the ordinary condition of the system. On the same principle, the Septic Poison of common water may be suspected to be more powerfully injurious in inflammatory fever than in health, and the withdrawing of it, as much as possible, to prove more sensibly beneficial.

Though we denominate these disorders by certain specific names, as *phrenitis*, *pneumonia*, &c. they are rarely so well defined in nature, as these terms would

lead us to imagine; on the contrary, different organs are often affected simultaneously. The stomach, in particular, is apt to participate greatly in the inflammatory condition of the system, so that it possesses an extreme degree of irritability, nauseating solid aliment, and rejecting even liquids, except of the mildest nature. I can venture to assert most confidently, that the abstraction of common water, and the use of pure diluents, tends most powerfully and speedily to remove this condition of the stomach. By this change, then, we may acquire a great controul over a train of very distressing symptoms, which greatly aggravate the sufferings of the patient, and augment the danger of the disease. On all accounts then, I apprehend the antiphlogistic regimen to be very imperfectly observed, unless to the other methods in common use be joined the removal of all irritation from this source.

But there are other conditions of the



system besides that just described, which, form the foundation of *chronic diseases*. Some of these are marked by weakness and mobility of the fibres; others by strength and torpor. In some, the sensorium is preternaturally sensible to impression; in others, it is morbidly obtuse and inirritable. *Pulmonary Consumption* furnishes an example of the first condition; *Melancholia* and *Mania*\* of the second. The diseases which are associated with these different states of the nervous power, are, in general, very imperfectly under the controul of medicine. Some are wholly intractable; others, though not speedily terminating in death,

\* I cannot forbear introducing the following remarkable testimony of VAN SWIETEN, on the effect of fruit and fruit *only* in *Mania*. It coincides, completely, with the doctrine I wish to establish, and the practice I am anxious to introduce. “Furentissimos ex melancholiâ maniacos senatos vidi, dum *foliis* fructibus horæis vescebantur; et quidém cerasis, aut fragis, ad viginti et ultra libros quotidie per aliquot septimanes assumptis, dum reliquos omnes cibos et cuncta remedia, ob veneni suspensionem, quam pertinacissime averfabantur.”—VAN SWIETEN Comment. in BOERHAAVE Aphorism. 1097.

are the habitual companions of a wretched and valetudinary condition. And if some of these are not deemed in their own nature fatal, it is often owing to the accession of new symptoms, in consequence of which change, a new denomination is given to the aggregate of the phenomena, and that is esteemed a new disease, which is, in truth, no more than a continuation of the old.

The antients attributed almost all chronic diseases to the excess in quantity, or change in quality, of the humours, and particularly of the *atra bilis*, or *melancholic humour*, which they esteemed a constituent principle of the animal fluids. The adoption of this theory is a proof, that they thought a great variety of chronic diseases to be the offspring of some common matter, either received from without or generated within the body. Certain evident appearances, either on the surface of the body, or in the conditions of the secretions, which they observed to be common to most



of them, gave a probability to this hypothesis. How these appearances were generated, they could not but be wholly ignorant, as, indeed, we have continued to be even to our own days.

In ascribing then these diseases to one common cause, I am supported by the spirit, at least, of antient observation. In the same spirit of simplicity is it maintained by BOERHAAVE—"hos (morbos  
 "chronicos) varietate quidem infinitos ratione symptomatum, tamen ex origine  
 "non adeo compositâ pendere, neque tam  
 "varia medicamenta medendive methodum requirere\*." In all the great processes of nature, the laws of which have been justly developed, a similar simplicity, equally grand and beautiful, has been discovered. Thus may a single fact, or a single principle, presented, perhaps, by accident, or detected by industry, be made to explain an infinity of phenomena, and

\* BOERHAAVE Aphorism, 1056.

facts, the most insulated and inexplicable, be reduced into order and harmony.

It may be observed, in general, that the digestive organs are, in almost all chronic diseases, greatly injured, insomuch that the stomach has been aptly denominated the universal sympathiser. The derangement is different in different diseases, or in different subjects. In some, the appetite is impaired; in others, the digestive powers; in others again, both the one and the other is morbidly increased. Whether this condition of the stomach is to be esteemed an effect of the alteration of the remote organs, or a cause of such alteration, it has not been possible to determine. I apprehend it neither to be the one nor the other, but rather the consequence of its situation and functions: these expose it most directly and powerfully to the influence of the poison, and it is, therefore, the first to feel the injury, which through it is communicated to the mass, and to feel it the most sensibly,

from the direct application of it, in the highest degree of concentration.

It is easy to foresee a multitude of objections, which will be raised against this account of the generation of diseases. Water, it will be said, is the fluid destined by nature to the use of man, and to ascribe these mischiefs to this matter, is to charge them directly upon nature, and the great Author of nature. To this it is enough to answer, that the true nature of man is to be improveable, without limit, by the exertion of his intellectual powers. Every thing about him is artificial, and, in a manner, created by himself. As he is obliged to submit almost every article of his sustenance to artificial processes, what difficulty is there in the supposition, that the fluids he admits ought to be treated with equal care? This is, in fact, what is done with almost all that are used. Few surely will contend, that these processes, or any others, have hitherto at all approached to perfection.

It may be thought, that the quantity of deleterious matter is too minute to operate the effects attributed to it; or that, by its mode of combination, it may be rendered inert. The quantity cannot easily be estimated; but being enough to cause a sensible impression on the palate and often on the stomach, there can be no difficulty in apprehending, that it may be active on the whole system. Doubtless, the Septic Poison is infinitely less powerful than its arsenical basis would be, if it were uncombined and acted with its whole energy. But as its nature is still arsenical, how much weight is to be given to these circumstances, it is impossible to determine by reasoning *a priori*: experience alone can fully resolve the question. To the smallness of the quantity and the inertness of the compound, may be opposed the extraordinary activity of the arsenical basis of the poison. If a portion of poison, equivalent in power to the one hundredth part of a grain of white arsenic, be introduced daily, it would seem more than

sufficient to effect all the evil I attribute to these solutions.

It has even been questioned, whether the stimulant power of common water, granting it to possess such a power, may not be useful and necessary to the actions of life. Little need be said in refutation of this notion, universal experience having shown that those springs, which are the most free from impregnations of all kinds, are perfectly salubrious; and of the very few, who have been known to confine themselves to the use of perfectly pure water, some have enjoyed a singular exemption from disease\*. But wishing to acquire correct notions of the effect of such a course, and particularly to watch the changes which are introduced by it into the habit, I have caused a family,

\* "FRANCIS SECARDI HONGO, who made distilled water his constant drink, without the addition of wine, or any strong liquor to the last, lived, with remarkably good health, to the age of 115 years."—Medical Transactions, vol. 1. p. 22.



consisting of two persons and seven children (the eldest of the age of nine years), to abstain entirely from the use of common water, and to use none but distilled. This injunction was complied with by all about nine months.

The children were as healthy as is common in families of equal numbers; what complaints they had were chiefly of the bowels, demanding that attention to preserve regularity in the intestinal evacuation, which is so commonly requisite.

The first effect of the change was universally a paleness of the countenance and shrinking of the features, a dryness of the mouth and fauces, and the secretion by the skin was evidently diminished. But the intestinal secretion was increased, so that there were, for several days, very large evacuations of dark and lumpy fæces. In about a fortnight the countenance recovered its natural appearance, and for several months there was little to be observed,



except that, upon the whole, the health was very good.

During the whole continuance of this course, the bowels continued perfectly regular, so that not one of them required a single dose of physic. The fæces also, which had often been fetid, hard and dark, in all assumed a perfectly healthy colour and consistence. In all, the complexion became much clearer; this was very discernible in the two eldest, in whom it had been dull and muddy. In all (except the fifth) the habit has been strengthened, though some became very sensibly thinner. This appears strongly in the first and third. The first had always been feeble, and had shewn a disposition to a curvature of the spine: to this there is not at present the slightest tendency. The third (a boy of six years) was of a scrophulous habit; strongly characterised by a fair and pale complexion, extraordinary thinness, hardness and swelling of the abdomen with habitual costiveness, 2

roughness of the skin, habitual redness of the eyelids, and a dilated pupil. These tendencies to disease have disappeared. In all, the dark or yellow incrustation which had formed on the teeth was almost removed; and the disposition to form fresh incrustation is entirely destroyed, so that the teeth in all will become quite white without any artifice, and the gums perfectly sound\*.

One only of these children (the fifth) was of a plethoric and inflammatory habit. In her there was a disposition to turgescence and congestion in the brain, with a thick and oppressed respiration, and a strong craving for animal food. The first change was, that the respiration became more free. The whole habit has gradually

\* This black and foul incrustation appears to be gradually decomposed by the atmosphere; but this process is extremely slow, so that the crust remains, long after the disposition to deposit fresh matter is removed, and the teeth become clean in those parts first where the crust is thinnest. As it decomposes, it puts on different colours, and these changes are the same in all the teeth in the same subject, but not in different subjects.

become less inflammatory, and the fondness for animal food has changed to the more natural and healthy appetite, for a light and vegetable diet\*. The front teeth of this child were remarkably foul; the black matter did not disappear, but in this time much of it had worn off, and it wards continued to diminish daily.

The mother, whose health had been often very infirm, experienced very singular benefit from the change. The digestion and respiration were remarkably strengthened, and that necessity for constant artificial evacuation, which makes life itself so uncomfortable, was almost entirely obviated. She was enabled to nurse an infant (remarkable for his strength and liveliness) during the whole time uninjured. This she could never do before for half so long a time, and that too at a great expense of her own strength and the health of her offspring. But the benefit

\* The same is true of them all, but in a smaller degree.

was not obtained without some inconvenience. At first (besides experiencing the same consequences as the children) a great forenens was perceived, first in the stomach and bowels, and afterwards over the whole body; and for some time, particularly during the hot weather, she was tormented with excessive thirst and profuse perspirations. However, these ceased gradually, as the system became reconciled to the change.

The father had been troubled with a high degree of *dyspepsia* for a series of years. This was connected with its usual concomitants, oppressive flatulence, pains and uneasiness of the stomach, costiveness and tension of the *abdomen*, nocturnal restlessness and jactations. The indigestion was very speedily relieved, and it became so trifling as hardly to deserve notice: with this, all the attendant sufferings have disappeared. The bowels became perfectly regular. It may be worth while to add, that he had been troubled for two

months with a constant twitching of the left eye-lid, which quickly left him. This complaint, though only an inconvenience, I have known the forerunner of serious paralytic affections. The teeth, as in the younger part of the family, which had been much soiled, have lost their dark incrustation spontaneously. One tooth has repeatedly received a fresh incrustation\*, whilst the progress of the others towards whiteness has been almost uniform. This is exactly in contact with a gland in the lip, which occasionally swells; an observation which makes it evident, that the dark incrusting matter is mucus blackened by the air; and that though the condition of the fluids, which gives occasion to this peculiar secretion, can be entirely removed, a course of nine months is not long enough for the purpose†.

\* This appearance took place even after the course had been continued fifteen months.

† At this period a fatal event necessarily withdrew the greater part of them from my immediate inspection. The scarlet fever appeared in the family, which proved fatal,



All these observations demonstrate that the confinement to pure water operates, first, by strengthening the digestive organs, and through them the whole habit; and, secondly, by changing the composition of blood, and consequently of the secretions: it forms, therefore, a course which is completely alterant, and which perhaps is the only one in nature, which truly merits this

first to one of the children. The mother too, oppressed with fatigue, anxiety and grief, was seized with it; her delicate frame withstood its violence only two days, when her spotless and tender spirit was received into the bosom of her God.

Several months have elapsed since this occurrence. Of the two, who have continued under my observation, the dyspeptic sufferings of the father were entirely removed, after a course of about fifteen months. About the same time, and not before, every appearance of sickness was eradicated from the little boy, whose scrophulous habit has been noticed, and the change in strength and colour was generally remarked. A stronger proof can hardly be given of the great salubrity of this practice, than that of this child. He was formerly, in the country, very frequently indisposed. For the last sixteen months, the greatest part of which has been passed in the metropolis, he has not had an illness of a single day, except a mild attack of ulcerated sore throat, received by contagion.



denomination. The change is so great, that at first it is often attended with serious inconveniences. In a lady of great sensibility, who wished to adopt it, it occasioned such a dryness of the mouth, thirst, and fever, that she relinquished the attempt\*. Another remarked, that it appeared to brace him, as if he had taken large doses of bark. None of these effects can be said justly to be caused by the proper power of the water, but rather by the subduction of an habitual morbid force, and by the disposition to diseased action, which had been previously engendered. These feelings of uneasiness must be esteemed, therefore, the first processes of the constitution towards healthy action. Therefore, instead of concluding, from any immediate sufferings, that the water disagrees, and may prove injurious, the very

\* She has recently adopted it again, and the second attempt has been unattended by any suffering, and has been followed with the same relief to the stomach, which all have experienced, who have suffered much pain or uneasiness of that organ.

opposite inference is the just one; and they furnish a powerful motive for persevering in the course. The first changes induced, have been as various as the different habits of those who have tried the experiment. Some have not felt any inconvenience, but, on the contrary, have experienced instantaneous and progressive relief. All who have had any uneasiness of the stomach, have perceived it to sit lighter than common water, and, in particular, have found the sense of fullness and oppression, which is apt to be felt after meals, to be speedily and greatly diminished.

It may be asked, and indeed the objection deserves mature consideration, if constitutional diseases are generally to be esteemed artificial, and the effects of the *ingesta*, why do not infants escape them? We know that this period is, perhaps of all others, the most susceptible of diseased impressions, nor is even the foetus in the womb exempted from them. The answer

to this objection, I think, is obvious; viz. that the Septic Poison does not act merely by being received into the stomach, but by being absorbed into the circulation, and contaminating the fluids. Infants then become tainted from the blood of the mother. In confirmation of this, all the accounts we have of the infants of savage nations, prove them to be more robust and less liable to be affected by external impressions, from their very birth, than among civilized nations. They bear cold bathing in the very first days of their existence, a shock which would certainly be fatal to the greater part of our infants. There is, then, a sort of physical difference between the races from the first moments of life. With us the infantine nature is distinguished chiefly by the activity of the circulation, and the copiousness of the secretions. Thus, the very first stage of life is marked by a cutaneous eruption (the *red gum*) and the whole period of infancy by abundant secretions from the salivary glands, from the intestines, and from the

external mucous glands. The tendency of all these evacuations is evidently to the depuration of the fluids, and they are not to be deemed diseases, properly speaking, but constitutional processes for the conservation of the system. Even the green acid stools of infants, will be found in the most healthy, and would appear to be an useful and salutary evacuation, if not excessive in quantity. When these secretions are checked, from causes either external or internal, fevers are instantly excited, or epilepsies, which are still more dangerous.

Under the view I have taken, the origin of constitutional diseases is from without; and the predisposition is to be sought for in a morbid condition of the fluids. The humoral pathology was adopted, not from any accurate researches into the properties of the fluids, nor any profound reasoning on the phenomena of diseases, but as the result of plain, palpable, and obvious observation, and affording to common com-

prehension an easy explanation of a multitude of facts, which are perpetually occurring. If it has been rejected by some of the most eminent of modern teachers, this has certainly not happened in consequence of our knowledge of the constitution of the fluids having arrived at perfection; on the contrary, it is allowed that no part of chemistry is so abstruse and so defective, as that which treats of the composition of animal matter. Doubtless, to understand, as far as it is given to the human intellect to understand, the principles of life, is a knowledge of the first utility. But those who limit their inquiries to the vital actions, cannot but have a very imperfect view of the economy of nature. To the perfection of physiology and pathology, the developement of the composition of the matter of the body is as necessary, as the investigation of the laws, to which the motions of the system, and the sensations associated with them, are subjected. These are sister branches of the same science, each des-



tined to give light and support to the other; and as long as either of them remains rude and uncultivated, medicine must continue an art almost wholly empirical, in which the nicest judgment is liable to great errors, for the want of proper *data*, by which to guide its decisions.

Waters, which are very hard, sensibly coagulate vegetable juices; and, in their ordinary condition, they have a similar action in an inferior degree. The fluids of the animal and vegetable kingdoms have many common properties. Hence there is a great presumption, that these waters have an analogous action on the blood and other fluids of animal bodies. It seems probable then, that a portion of the Septic Poison is not evacuated, as fast as it is introduced, but that some is constantly retained in the mass, which by the application of fresh matter perpetually increases, till the blood and the other fluids become saturated. This supposition is conformable to known facts. Poisons



or medicines which occasionally act as such, often appear inert for a time, and then suddenly show their deleterious power with extraordinary and unexpected violence. In this case they act, not by repeated impulses, or perpetual irritation, but by their quantities being accumulated (as it has well been termed) in the system, and their force being developed by external impressions or accidental circumstances. Much the same thing frequently happens in the formation of acute diseases, of which it may be perceived, that the foundations are laid for a length of time, before any alarm is taken from any great derangement of the vital functions.

These considerations explain readily how it comes to pass, that the changes introduced into the system, by abstaining from the use of all but pure liquids, are so very slow and gradual; and, at the same time, they form the limit to the utility of this practice. Such of the constitutional symptoms, as proceed from a taint of the

whole mass of fluids, can be removed only by a complete change of the composition of the blood; a change necessarily requiring a great length of time to be effected, though precisely how much it is impossible to determine. Fifteen months I have shown to be insufficient to prevent the secretion of mucus, which blackens by the contact of the atmosphere, an appearance which is undoubtedly morbid.

I find that the same eminent physician, whom I have cited, as confiding so much in the efficacy of the Malvern water, enjoins a residence of two years in cases which are very serious. It is moreover obvious, that where disease is the effect of this accumulation, the advanced stages must often prove incurable, though the introduction of new portions of Septic Poison be totally prevented. For the diseased actions necessarily continuing for a length of time, the opportunity for effecting any important constitutional change may have passed, so that the dissolution of

the system is inevitable. At the same time, as it is hardly possible to appreciate exactly the restorative powers of the body; no case is so desperate, as not to warrant a trial of a method so simple and innocent, and at the same time so efficacious, as that which I have proposed.

I have already detailed the effects of the confinement to pure fluids on several subjects; most of these, enjoying pretty good health, could not be expected to experience any very remarkable change, and therefore, the observations which were made may have the appearance of being triflingly minute. To afford still more satisfactory evidence of the utility of the practice, I shall relate a few trials, which have been made of its efficacy in cases of disease. They have the essential requisite of being cases of great obstinacy, and to the cure of which medicine alone was inadequate. On the other hand, they have the disadvantage of the course not having been pursued long enough for the patients

to reap all the benefit, that is expected from it. The facts, however, even under this disadvantage, will, I think, be deemed sufficiently striking.

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### CASE I.

The Rev. Mr. M——s, aged thirty-three, a gentleman of dark complexion and melancholic temperament, had been afflicted with sick headach for sixteen years at the least. The paroxysms were of singular severity, continuing commonly for twenty-four, often for forty-eight hours, during which time he was incapable of any exertion, and was generally confined to his bed for a great part of it. These paroxysms were attended with great derangement of the stomach, eructation, and frequently with sickness and vomiting. The attacks had recurred at irregular intervals: for the last year or two they had generally happened weekly; sometimes twice a week: for about two months, at

the end of the summer of 1803, he had intervals of two or three weeks; but in the autumn and beginning of the winter, they returned as frequently as ever, and with great severity. Many articles of diet would certainly bring on a paroxysm, from which he was obliged therefore to abstain, or to use them very sparingly. At all times the bowels were much confined, and the stomach perpetually oppressed with flatulence. From medicine, which had been applied under the best advice, he had received occasional relief; but it had never proved lasting, so that he was obliged to content himself with regulating the bowels, by the constant use of aperient medicines. Excepting these distressing paroxysms, he could not be said to be out of health; the strength, sleep, and appetite were unimpaired, but the countenance had always a dull and sickly paleness.

About the beginning of 1804, he entered upon the course proposed, and has



adhered to it with the greatest regularity. It has not been at all irksome to him, as he is a water drinker, and very sparing in the use of wine. No change was made in his diet, and the only medicine he has taken are some aperient pills, to which he had been accustomed. The fluid he confined himself to for the first five months was distilled water.

After using this course for three weeks, he experienced very sensible relief. The paroxysms of headach still recurred as usual, but with much less severity, and ever since the disorder has continued to decline. During the months of March, April, and May, he had only three attacks, and those of so little severity as not to interrupt his usual occupations. From the beginning of June to October, not being able to procure the water, he confined himself to whey. During this period of four months he has suffered only two attacks; one trifling, the other of some severity, but still much less violent



than formerly. The flatulence of the stomach is removed, the indigestion greatly relieved, so that he now uses many articles of diet, which formerly he could not venture upon; and the countenance has entirely lost the sickly paleness, which has been succeeded by a fresh and healthy colour.

But it is evident, that, notwithstanding he has received such striking benefit, the disposition to the disease is not eradicated. The constipation of the bowels still remains, and he did not find the whey, when used in this manner, to have any laxative powers; nor does he think it corrects the symptoms of *dyspepsia* so powerfully as the pure water. The paroxysms of headach were commonly preceded by a sense of lassitude and debility of the legs. This feeling he often has at present, but not followed by headach, as heretofore. He thinks also, that this diet has produced a degree of muscular debility, which is however but trifling.

During the month of October, he was forced to abandon the system, and to use common water. After three weeks the headachs began to return as frequently as ever, so that he suffered three in the space of twelve days; and, in a short time, the change of his countenance evidently betrayed the irritation of the system. Towards the middle of November, he had again recourse to the distilled water, and experienced the same advantage as before.

Mrs. M—— has used the same course with her husband. She was in perfect health before she entered on it, and has observed no sensible alteration from the change.

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## CASE II.

A little boy, between five and six years old, nephew to Mr. ROBERTS, Surgeon, of Chancery-lane, had lost the use of his lower limbs, so that he could move only.

on crutches, and the body was supported by irons. The disease had been formed three years and a half, and the weakness of the legs was such, that he could not imitate the motions of walking in the smallest degree. This weakness was obviously from a defect of the nutrition of the parts, and the left leg was more shrunk and contracted than the right. The other parts of the body were perfect in size and strength; but the health was not good. The stomach was oppressed with flatulence; the abdomen tense; the bowels irregular; the stools foul, dark, and loaded with gelatinous matter; the countenance fallow and bloated.

To the use of medicines, which seemed adapted to the circumstances of the case, was joined the dietetic course, which I have so often mentioned; it was begun about the beginning of February, 1804, and pursued steadily four months. By this time, he could use his legs so much as to

form the motions of walking, and the muscles of the contracted limb had began to swell out, and were stronger. His health improved, his countenance became clear, and his evacuations natural, except that a calomel purge still brought away much gelatinous matter. It was observed too, that by taking beer, the flatulence and oppression of the stomach returned immediately.

In June he left town, and has since been for a time at the sea, and in the country, where he resides. The same regimen has been observed, but not with perfect strictness. The last account I have heard of him was in the middle of December, at which time his mother writes—"That he is well in health, and stronger; gets about very much, has got up stairs three times without help, and wishes much to leave off his irons;" and she requests to be told, whether this may be allowed.

## CASE III.

Rev. Mr. W——s, aged thirty-six, had for a series of years been falling into a deplorable state of muscular debility. This had at length become so extreme, that the hands were nearly useless, and he walked with much difficulty, going very slowly, and with steps of less than half the natural length. The circulation was very feeble, the extremities cold; there was a kind of stricture at the joints of the knees and ancles, diminishing the flexibility of the limbs, and there were old ulcers upon each ancle, which had been dried up, but had never healed from the bottom.

He used the regimen I have laid down for about four months pretty strictly, with the effect of strengthening the habit very remarkably, so that at the end of this time he could take long walks; the extremities had recovered their natural warmth, and the ulcers had first inflamed and be-



come painful, and afterwards perfectly healed and skinned. The flexibility of the lower extremities was also restored.

During the summer the regimen was continued very imperfectly. Still, from having been enabled to use exercise, he has continued to gain strength. The upper extremities have regained their powers more perfectly than the lower. He has found a good deal of assistance in walking, by the use of a bandage laced tightly over the legs.

The condition of the arms, in this patient, resembled so perfectly that of those, who become paralytic after suffering saturnine colic, that I doubt not that the peculiar symptoms of the case were caused by the poison of lead. I possess some collateral evidence (which it is needless to adduce here) that the water in common use was the vehicle of this poison. But as this sort of palsy remains, and often increases, after its specific cause has long



ceased to operate, this continuance is due to other morbid forces, preventing the restoration of the nervous energy. Such sufferers are objects, therefore, of this treatment as much as the subjects of other chronic diseases; nor are there any in which medicine more requires every assistance, that can be given to it by diet.

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#### CASE IV.

A widow lady gave a very striking proof of the great change introduced into the system by the use of pure water. She had been afflicted some months with a very hot and red efflorescence on the face and forehead, producing a scurfy matter on the skin. The eye-lids partook of the disease of the face. She used the regimen for a week. The efflorescence faded greatly during its use; but the change produced great flatulence, sick headach, constipation, and other severe and disagreeable symptoms. Upon discontinuing it, the efflorescence quickly returned. After a

fortnight she resumed the regimen, and a second time it faded as before, and the use of the water was now unattended by any disagreeable effects. But as the habit became reconciled to the change, the disease returned. After four months, however, the forehead had become clear, and on the cheeks it sometimes faded, and at other times returned as much as ever. Since the cold weather it has been stationary, and the eye-lids (which had been well) have become again inflamed. It must undoubtedly take many more months before this disorder is eradicated.

This lady thinks, that the regimen has produced a sense of debility, similar to that observed by Mr. M——s. Page 76.

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### CASE V.

An unmarried lady, under middle age, had been subject for a series of years to toothach and pains about the face and head. After suffering several attacks of

this kind, almost annually, her health began to fail, and she became afflicted with a variety of irregular nervous symptoms. The eyes became preternaturally sensible to light, the pupils contracted, the eye-lids stiff, and she was unable to raise them, and brown and yellow spots were floating before her, on attempting to read or work. The mucus of the nose was altered in its texture, became fetid, and approached the nature of pus. The power of articulation was impaired, the speech being at times thick and indistinct. The whole head was cold, uneasy, and very sore and tender externally, with a great confusion of the mental faculties. All these uneasy feelings were greatly aggravated by motion, which occasioned an irritation, as if the head was splitting; in consequence of which, and of her debility, she could scarcely take any exercise; her sleep too was very scanty and disturbed. The digestive organs suffered as much as the sensorium; the appetite was much impaired, and the stomach oppressed with distention, spasms,

uneasiness, and flatulence. The<sup>e</sup> general state of health was very bad. There was great muscular debility, the pulse very low and feeble, the gums loose and purple, and a degree of *febricula* was always hanging on her. If I were to mention the eminent and honourable practitioner, whose advice she had received without benefit\*, I should give the strongest proof, that from medicine alone no benefit was to be hoped for. Her complaint had affected her with great severity for two years, but the stiffness of the eye l d had been of much longer duration. This aggregate of symptoms would have been denominated by the old writers *Cachexia Scorbutica*: I know not that there is any appropriate name for it in modern systems or nosology.

She has adopted my dietetic regimen nearly seven months, in union with such medicines, as seemed suited to the circumstances of her case; and in conse-

\* The medicines she had tried were Flores Cardamines, cascarilla, æther and camphor.

quence, all the symptoms have been slowly, but steadily receding. The stomach, as it received the first benefit from the change, has experienced the greatest improvement, in a permanent increase of the appetite and digestion. The ocular *spectra* have disappeared, the thickness and difficulty of articulation is quite removed, as is likewise the soreness of the scalp; the gums have become firm and florid, and the countenance has regained correspondent mark of returning health. But the cure is not as yet complete. The eyelids have only partially recovered their flexibility, which gives a peculiarity to the countenance; there remains a constant uneasy feeling in the back part of the head, and this is so much aggravated by exertion, as to be a great obstacle to taking proper exercise. Notwithstanding this inconvenience, she is, even at present, enabled to walk more than she has done for upwards of a twelvemonth.

This lady had perceived, for many



years, that a slight concussion of any kind, as a false step in walking, shocked the whole head very severely. From this circumstance and the whole train of symptoms, it seems probable, that a degree of organic læsion of the brain itself, has laid the foundation of the other sufferings. This symptom has declined, with all the others, and in the same proportion.

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I have seen striking benefit from what I consider to be a partial imitation of this regimen. I directed a poor man, who was a perfect cripple with the rheumatism, in which condition he had been the whole of the winter and spring of 1804, to confine himself, as much as possible, to the use of milk and whey. In a few weeks he exchanged his crutches for sticks, and, towards the middle of summer, was able to follow his work. Towards the end of autumn he relapsed, though he had persevered in his diet, but the attack was trifling compared to his former sufferings, and the great change that has been effected in his



countenance, strength, and voice, make me entirely assent to the panegyric on the virtues of milk, pronounced by WEPFER. (Epist. ad VERZASCHAM.) “ Certe  
 “ divini aliquid in lacte latet. Antea  
 “ nunquam credidissem, nisi id sensibus  
 “ comperissem. Vidi his meis oculis quasi  
 “ novos homines inde factos fuisse. Nam  
 “ legitimo ejus usu, habitum firmiorem,  
 “ colorem nitidiorem et vires robustiores  
 “ plurimi acquiriverunt.”

I have tried the efficacy (in conjunction with medicine) of this regimen, in a case of *Anasarca* and *Hydrothorax*, which, following *ascites*, was deemed desperate. The benefit received from the first change was remarkable, but as the patient was soon removed from my inspection, and, after a few weeks, renounced the method, I think it useless to detail the particulars. I need hardly add, that the disorder proved speedily fatal.

I have also used it for ten weeks, in

conjunction with medicine, in a case of great torpor of the intestines, with atrabiliary evacuations, and symptoms, which strongly indicated disease of the liver. The patient seems convalescent, but not in a state of sufficient security to warrant a decisive prognostic. It may be enough to state, that, in this case, the number of the pulse was at first 96 in a minute; during the first fortnight it sunk gradually to 82; at this point it remained stationary for five weeks, when it again sunk to about 74, which is, probably, the natural standard.

It may be remarked of these cases, concerning which we may venture to predict, from the progress already made, that they will all, in the end, entirely yield to the treatment pursued, that none could be selected more dissimilar in appearance\*.

\* I wish it also to be particularly observed of them all, (and, indeed, of all that are related throughout this Inquiry, unless it be otherwise expressed,) that the strength, though much impaired, was not radically exhausted. I

As far as they go, they prove that the variety of symptoms proceeds much more from the variety of habit in the subject, than from a difference in the morbid matter, and that in all, the fluids received into the body are the principal vehicles of this matter. This argument might be confirmed by a minute consideration of the symptoms of almost all the chronic diseases, to which the frame is liable. But as such an investigation would lead me into a field, infinitely too wide for this occasion, I shall confine myself to taking a very cursory view of the principal phenomena of four. These are Scrophula, Consumption, Cancer and Gout. Scrophula and Consumption are deemed almost endemical to the British Islands, and, doubtless, from the universal ravages they commit, any improvement in the treatment

say this, particularly, because a friend in the country, who has been using the method, feels surprised to observe so little amendment in three months in some cases, every one of which, (as far as I can collect from his description) were expected to be speedily fatal.

of them is a matter of the greatest interest to the British public. Towards the cure of Cancer, the most tremendous of human calamities, the efforts of professional skill have of late been much directed. Besides the reasoning on the origin of this cruel malady, I possess a few facts, which strongly corroborate my opinion, and confirm my hopes, that it is in our power to eradicate it. I may say the same with regard to Gout. The subjects of this disease, have, in all ages, been the principal victims of the arts of imposition. It may be reasonably expected, that the rank and wealth, which have exposed them so much to these artifices, will render them more active in the introduction of solid improvements, if it should appear, that such are within our reach.

## SCROPHULA.

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I SHALL content myself with a very few words on this disease, because the scrophulous diathesis is nearly the same as that of the purely consumptive, and will, therefore, be more particularly considered hereafter, and because my opinion of the origin of Scrophula has been already maintained, by an authority much superior to my own, though not, perhaps, to the same extent. The facts on which it is grounded (independent of those peculiar to myself), lie in a narrow compass; for it must be remarked of the writers, who have seemed to espouse this opinion, that, by strumous swellings, they have com-



monly understood the *Bronchocele*, or Derbyshire neck, a disease distinct in its symptoms from genuine Scrophula, and, probably, dependent upon a different constitutional disposition.

It is the opinion of the majority of writers, that a peculiar acrimony is the foundation of this disease; but they are not agreed upon the nature of this acrimony, nor in what part of the fluids it principally resides. The lymph has been most commonly accused, from the disorder affecting so frequently the lymphatic glands: but as the lymph is directly drawn from the blood, the latter cannot well be thought of a healthy composition, whilst the former is acknowledged to be morbid. The supposition, indeed, of the lymph being peculiarly affected, does not accord with the phenomena of the disease. If any one disease, whatever, can be truly called constitutional, it is Scrophula. Besides the lymphatic system, it affects almost every part of the body, external and



internal. The skin, the organs of sensations, those of generation in both sexes, the mam-mæ, and the bones, suffer from its ravages\*. Scrophulous tumours or abscesses, have been found within the cavity of the *pericardium*, in the lungs, *peritonæum*, *omentum*, mesentery, liver, spleen, kidneys, bladder, *vesiculæ seminales*, prostate gland, testicles, and connected with the membranes of the brains†. Moreover, there is evidently in scrophulous subjects a laxity of all the muscular fibres, so that the parts, which are not diseased in structure, are, notwithstanding, morbid in their actions and powers. It is obvious then, that Scrophula is a constitutional disease, and if dependent upon acrimony, that is to say, upon a morbific matter, it must be such as pervades the whole mass.

The signs of this acrimony have not been very distinctly laid down; so that

\* HAMILTON on Scrophula.

† BAILLIES' Morbid Anatomy—passim.

its existence is, by many, still deemed a gratuitous assumption; and,, doubtless the hypothesis has led to no useful practical inference. I think it is shewn by the disposition to increased secretions (as the discharge behind the ears); and the habitual state of inflammation of the parts most affected (as of the mucous membrane of the upper lip and nose, or the ciliary glands), plainly evinces, that the inflamed parts are habitually irritated by the fluids, which pass through them.

There will seem no improbability in this supposition to those, who reflect on the examples of the virulence and activity of the secretions, which are related by writers of the best credit. Matter has been thrown from the stomach, causing an indelible stain on silver vessels\*. The sweat has been observed to be so acrid, as not only to excoriate the skin, but to destroy the texture of the linen†. The acidity of

\* SCHENKII *Observ. Med. Lib. iii. Obs. iii.*

† HOFFMANNI *Opera. Tom. iv. p. 407.*

the perspiration, in different diseases, has been very commonly observed\*. The urine of scorbutic patients has corroded linen†. The blood itself has been said to corrode and render friable the lancet used in phlebotomy‡. VAUQUELIN has shown that the serum of the blood dissolves copper§. Triturating mercury with fat, effects a true oxidation of the metal||. The saliva not only oxidates iron, copper, and mercury, but even gold and silver, according to the curious observation of MICHEL DU TENNETAN¶.

Dissections have shown, that in cases of deep Scrophula the glands of the mesentery suffer like the external glands, and it is known also, that the former are very commonly diseased, where there are no

\* HALLER Physiolog. Tom. v. p. 49.

† SENNERT. Tr. de Consensu et Dissensu Chymicorum. Lib. I. c. xvi. p. 16. DÖRING. Tr. de Scorbuto, p. 109.

‡ Mis. Nat. Cur. Dec. ii. A. II. Obs. 107.

§ FOURCROY Connaissances Chymiques. Tom. ix. p. 154.

|| Ib. 183.

¶ Ib. 366.

marks of Scrophula on the surface of the body. This fact, alone, renders it highly probable, that the acrimonious matter is not generated within the body, but that it is introduced from without, and passes through the lacteals into the blood. If so, it must be received with the *ingesta*.

This opinion nearly coincides with that of those, who attribute the frequency of Scrophula among the poor to the poverty of their diet. But the same cannot be alleged of the rich; and I cannot find any writer who directly attributes it to the impurity of water\*, unless it be the venerable HEBERDEN, and that in a manner very guarded and reserved. He has said, that glandular swellings, in those

\* Dr. PERCIVAL\* cites the Comment. Med. Lips. Vol. ii. p. 103. for the fact, that those who use the waters of the river Kirenga, in Siberia, become scrophulous. But the disease said to be produced by these waters is the Bronchocele. The original authority is GMELIN, Reise durch Sibirien. Tom. ii. p. 282. 8vo.—Gottingen, 1752.

\* Essay on Water, Vol. i.

who have enjoyed an habitual state of good health, are caused by unwholesome diet\*, of which we know, from the tenour of his writings, that he esteemed hard water to be a very principal article. He has adduced a remarkable change, which took place in the health of the inhabitants of Rheims, as a proof of the great importance of the purity of water in this disease. The facts are so strong, that it is worth while to produce the authority, on which they rest. The following is the statement of M. LAIGNIERES, a physician of Rheims, to M. THOUVENEL.

“ Since an excellent inhabitant of this  
“ place has generously expended a large  
“ sum of money in the construction of  
“ an hydraulic machine on the canal of  
“ the Vesle, by which the water of this  
“ river is distributed to every part of the  
“ town, a favourable change has been  
“ observed in the health of the inhabitants,

\* HERBERDEN Comment. p. 362.



“ not only in regard to the Bronchocele,  
“ but also in scrophulous complaints,  
“ which were equally common. Besides  
“ the common and general belief, I have  
“ ascertained the fact of the diminution  
“ of scrophulous disorders by particular  
“ evidence. The hospital of St. Mar-  
“ couff is appropriated solely to the vic-  
“ tims of this cruel disease. I have con-  
“ sulted the registers of this institution,  
“ and find that the number of patients  
“ has been diminished more than one  
“ half in about the last thirty years. The  
“ religious sisterhood of the hospital af-  
“ firmed me, that the number is still de-  
“ creasing daily ; so that if, as is probable,  
“ this diminution continues, the greater  
“ part of the funds of this hospital may  
“ be diverted to objects of more urgent  
“ necessity\*.”

This account renders it probable, that  
Scrophula and Bronchocele have the same

\* Soc. Roy. de Medicine, Vol. ii. Histoire, p. 280.

origin. But with regard to the latter disease, there is such a host of evidence in favour of its being produced by water, that it is quite needless to adduce either argument or authority to establish this point. The inference is obvious. In certain situations, Scrophula is common and Bronchocele rare: in others, the reverse is the fact. The proportionate frequency either of the one or the other, depends on accidental circumstances, which have power enough to modify the constitution, but which would not alone be sufficient to excite either the one or the other disease.

The following history is given us by HERBERDEN, on his own authority:—"An  
" impure water, which curdled with soap,  
" appeared evidently, in one adult pa-  
" tient, to lay the foundation of strumous  
" swellings. This person had lived, for  
" thirty years, free from every strumous  
" taint, the signs of which, at last, be-  
" came visible, after drinking a water of

“ this sort a few years. The lymphatic  
“ glands became tumid, both in the neck  
“ and the *axilla*, and sometimes suppu-  
“ rated, as long as he used these waters,  
“ but after he began to use a purer sort,  
“ the swellings began to recede, and, at  
“ length, they all disappeared, nor had  
“ they returned after the lapse of thirty  
“ years\*.”

It seems surprising, that one who viewed the subject in this light, had not brought the question to the test of experiment; for it is evident, that citing *one* case is equivalent to an acknowledgement, that he was not furnished with any others of equal weight. But the evidence, if duly weighed, furnishes ground for suspicion, much beyond the direct proof it affords. In the case of the city of Rheims, the use of the waters of the Vesle did not eradicate the Scrophula, but simply diminish the number of sufferers. It would seem,

\* HERBERDEN Commentarii, p. 362.

therefore, that this water furnished the tainting matter, but in less abundance, or in a milder form, than the water of the wells. The prejudice which the very accurate observer, whom I have quoted, entertained against the *hardness* of waters, probably misled him, so that he took for granted, that soft waters are innoxious. But the Septic Poison may undoubtedly be found, both in hard and in soft waters; and there is no reason to think, that the infalubrity of different springs bears any certain proportion to the respective quantities of solid matter, contained in a given quantity of the fluid. The experience of CULLEN leads us to form the opposite conclusion\*.

If to this evidence we add the acknowledged power of the pure water of Malvern, in many cases of deep Scrophula, it affords no small presumption, independent of the proof furnished by this investigation, that impurity of water is the

\* CULLEN's *Materia Medica*, Vol. i. p. 406.

real source of this most common and universal of all diseases. The just inference to be drawn from this presumption, is of great latitude and importance.

The Bronchocele is universally allowed to be generated by the use of impure water, which disease, though more frequent in certain situations, is diffused sporadically over the whole country; and it has been made probable, that Scrophula may be traced to the same source. But Scrophula is the basis of many other of the most serious and fatal diseases, which afflict the human frame. The connection between Scrophula and Pulmonary Consumption is obvious and acknowledged; the latter being often no more than constitutional symptoms ingrafted upon the scrophulous diathesis. It has been asserted by writers of great experience, that scirrhus is always found in scrophulous subjects; and even that most dreadful of human maladies, Cancer, has been deemed a modification of the same disease; undoubtedly



there are features of resemblance, strong enough to warrant this suspicion.

But let us carry this reasoning one step farther. It is not unusual, that out of large families, the greater number perish before puberty; and that some bear deep marks of a scrophulous taint, from which the others are exempt. But can it be believed, that the poison, which is powerful enough to excite Scrophula, is absolutely inert upon those, who bear no external marks of its action? Is a matter, which in some inflames the emunctories, through which it is secreted, and irritates the lymphatic glands, through which it passes in the course of absorption, is it probable, I say, that this matter is absolutely innoxious upon those, whose fibres are more firm, whose systems are more torpid, or whose glands are less irritable? Surely, such an assumption is repugnant to every law of sound reasoning. On the contrary, if the *data* be granted, we can hardly avoid suspecting, that a sub-

stance so active will betray its energy in a variety of forms, and that tribes of diseases, the most dissimilar in their obvious external characters, may be traced to a common source, and be subdued by a common regimen.

In addition to the proofs already adduced of the connection of Scrophula with water, we may add, that domesticated animals are subject to it. It affects swine and cats. The Farcy of horses is a scrophulous disorder\*. I think Mr. HUNTER used to observe, in his lectures, that tame monkeys are very subject to it. Sheep have it in all its forms.

I have not had an opportunity of treating any subject, labouring under pure Scrophula, according to the method proposed in this Enquiry. I entertain no doubt, from the changes I have related, which took place in the habit of the little

\* SEEVAGES Nosologia, Vol. ii. p. 543 et 544.

boy, who has undergone this course (See p. 61), that it would yield to this treatment, but there is no reason for supposing that this would happen speedily. On the contrary, cases that are deeply rooted, would, probably, demand much patience and perseverance. Medicines, likewise, of which experience has shown the utility, may very properly be combined with the dietetic course. The utility of taking a large proportion of milk (where it could be procured good,) has been often experienced, which is the regimen approaching the nearest to that, which I would adopt.

It must be allowed, that, notwithstanding the singular utility which has been derived, in many scrophulous cases, from the use of the pure natural springs, as the Malvern water, many cases have resisted their power. On this subject it may be observed, first, it has not been understood how slow is the constitutional change introduced by the change of water. Eight or ten months may have great

effect in stopping the progress of disease, but it cannot have much in producing a radical change in the animal mass. But, secondly, it is to be suspected, that no natural spring whatever at all approaches the purity of distilled water. They are none of them wholly free from fixed ingredients. But Septic Poison, or animal and vegetable matter in a state of putrefactive decomposition, exists, probably, in an infinite variety of forms, and, doubtless, in great abundance in the form of gases, or united to acriform fluids. These may be dissolved, and will escape the action of the chemical tests hitherto employed. The following consideration proves, that this is not a mere gratuitous supposition. None of the natural springs have ever been found to produce those extraordinary, and (for a time) those disagreeable changes, which are sometimes the first consequences of the use of perfectly pure water\*. It must, therefore, follow, that their medicinal power cannot be, by any means, so great.

\* See the preceding pages, 64—67—85.

## CONSUMPTION.

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BEFORE considering the symptoms of Pulmonary Consumption, it may be useful briefly to notice the principal functions of the organs of respiration.

The lungs are a complicated organ, which are subservient to various purposes in the animal economy. First, they are an excretory organ, perpetually secreting from their extensive surface, a large quantity of aqueous vapour. As the breath of many persons is very offensive, even in health, and as this is common in disease, it is probable, that at all times, much of the excrementitious and putrid parts of the blood are eliminated, by the secreting



surface of this viscus. Perhaps the carbonic acid, which is perpetually passing off, dissolves these putrid exhalations, and, by its union, makes them inoffensive to the bystanders, if they are not more than commonly abundant\*.—Secondly, the oxygen of the atmosphere deprives the blood of a portion of oxidizable bases, carbone and hydrogen, which are separated and eliminated in the form of carbonic acid, and a quantity of water, in addition to that, which is secreted by the surface of the lungs. Another portion of oxygen, and (as is made probable by some recent experiments,) some azote likewise combines with the blood itself, by which a great change is produced in its chemical and physical properties, with which we are very imperfectly acquainted. It is

\* Carbone, the basis of this acid, is known to unite with putrid matter, and destroy its odour. Carbonic acid also, according to the experiments of MACBRIDE and others, sweetens putrid flesh, but without stopping the putrefactive process, that is to say, it unites chemically with putrid vapour.

known, generally, that in the pulmonary circulation, its colour is changed from violet to a bright red; that both its temperature and its capacity for heat is increased; that its specific gravity is diminished, and that it becomes the peculiar and specific stimulant of the arterial system. Which of the constituent principles of the blood it is, that, by fixing the oxygen, receives the power of stimulation, has not been determined or conjectured; it is, probably, the metallic matter, which is essential to its composition. The decompositions and new combinations which are formed by these processes, are the source of animal heat, which is abundantly generated both in the lungs, and throughout every part of the body.

As the arterial system is stimulated by the blood, so all the vessels of the body and all the glands (which are a congeries of small vessels) are stimulated into action by their proper and peculiar fluids, which are the secretions of the various glands or membranes.

Let us suppose now, that from an alteration in the composition of the blood, it becomes more powerfully stimulant, and that this property is communicated also to the various fluids secreted from it. In these circumstances, the circulation would become accelerated, all the secretions would be increased, and if the supply from the stomach were not equal to the consumption, the body must inevitably waste and decay.

Conversely, when we see these appearances taking place, there is reason to presume, that the radical cause is to be found in the morbid condition of the blood and secreted fluids, stimulating the vessels to increased action, and, at the same time, destroying their tone by over-excitement.

Such, precisely, appears to me, to be the condition of the pure consumptive constitution. The essence of this condition seems to be a morbid state of the blood and secretions, exciting to increased

action, united to a diminished tone of the moving fibres. This condition of the blood, which has often been suspected in Consumption, as well as in Scrophula, has been commonly denominated an *acrimony* of the fluids\*. I would rather designate it an accumulation of extraneous stimulant matter. To prove its existence by any other method than by considering the phenomena of diseases, seems impossible, at least, in the present imperfect condition of the chemistry of animal matter. The constant heat and redness of the urine, the fetidness of the breath, the saltiness of the expectoration, the scalding and fetid stools make, however, the truth of this hypothesis almost evident to the senses. The diminished tone of the system is obviously marked by the dilated pupil of the eye, that strong characteristic of consumptive diathesis, and of the diminished energy of the sensorium. This

\* Hæc (temperies) consistit in teneritudine vasorum exteriorum, et in impetu acrioris utcunque sanguinis, &c. BOERHAAVE Aphorism, 1198.

symptom has been said by the celebrated DARWIN, to denote inirritability of the fibres, and as to its immediate condition, this phrase is undoubtedly correct. But the defect is not from an inherent and radical loss of sensorial power ; it is the consequence of the sensorium being under the influence of an irritation too violent, and thus being rendered less sensible of healthy stimulation. The proof of this is very simple. I have shown, that by withdrawing the irritating matter, the dilatation can be removed.

The consumptive are thin, pale, with an accelerated pulse and respiration, and a slow fever for a long time, either before the accession of cough, or when it is trifling. All this time, the secretory organs are perpetually stimulated to increased actions, and the stomach is unable to supply nutriment enough to repair the waste of the body, and this happens, though, at the same time, (as is often the case,) both the appetite and digestive powers



are preternaturally increased. The perpetual fever indicates the presence of something noxious constantly irritating the system.

This perpetual fever and increased activity of the secreting organs, cannot but effect a sort of depuration of the whole mass. Hence the external signs of the morbid condition of the fluids, may not be very obvious to the senses. What is noxious is thus constantly eliminated ; but as the nutriment of the body is also carried off at the same time, in the end, the system must, of necessity, be destroyed.

If this account be correct, fever is truly an effort of nature (to use the ancient language), for the expulsion of matter injurious to the system, as it was accounted by the old writers. What indeed is it, but the vital actions being performed with greater energy and velocity than in health? The circulation and respiration being carried on with increased activity, the system

must be more highly oxygenated, greater heat must be generated and diffused, and the secretions be, upon the whole, more abundant. That this is so, in fact, is clear from the wasting of the body. Fever is the same, whatever be the disease with which it is conjoined. Be it a catarrh, a consumption, or an ague, there are the same succession of symptoms, and the same varieties. Fever then cannot, of itself, be termed a disease, but rather an adjunct of other diseases; a process truly constitutional; and, therefore, it can hardly be doubted, that its tendency is salutary.

Consumption is commonly deemed a local disease, originating in the lungs, and excited by a variety of occasional causes. But if my view of the subject be correct, it must be accounted a constitutional disease, and the changes produced in the lungs are to be esteemed the consequences of the peculiar functions of this organ. It is evident to observation, that from the very beginning of the disease, and through the whole course of it, the

stomach and bowels suffer equally with the lungs, and that all the parts of the frame sink together\*. In the beginning there is often great tension of the bowels, and signs of abdominal infarction: at this period, the body is more apt to be bound than otherwise; the costiveness, indeed, is sometimes excessive. The digestion is, throughout, performed with great irregularity; hence the utility of frequent emetics, which have been proposed as a cure. Nor are instances rare, of the disease affecting principally, and being, for a long time, confined to the abdomen: in these examples, the fever, emaciation, and weakness, have taken the same course as in the more common cases; but the cough and expectoration have not appeared till the

\* “In all decays we generally perceive the stomach the first bowel affected.”

ROBINSON on Consumption, p. 128. An. 1727.

“In all consumptive cases, nay, I might have added in all chronical diseases, it will be perceived, that the stomach is the part that is affected.”

STEPHENS on Consumption, p. 140. An. 1761.

latter periods. Instances, too, are not unfrequent, of obstinate diarrhœa being the first and prominent symptom, before the accession of cough. I need hardly add to these proofs, the incurable diarrhœa of the last stage, joined with the aphthous mouth, the excoriated tongue and throat, and the general disease of the secreting surface of the whole intestinal canal. These symptoms are nearly uniform towards the close, and afford almost an ocular demonstration, that these membranes are under a constant irritation, and are as extensively and radically diseased, as the lungs themselves.

How happens it then, that the lungs are found affected so universally, that, by common consent, the name of *Consumption* implies a disease of this viscus? What are the tubercles, the *vomica*, the *hæmoptoe*, the expectoration, which so strongly mark the destruction of this important organ? All these symptoms, must, I think, be

considered as effects, and not as causes of the constitutional disease.

The lungs are the great exhalant and ventilator, as it were, of the blood. Through them all the morbid effluvia of the body are eliminated, more copiously than by all the other excretory organs. The most virulent contagions pass out with the breath, and are diffused with it through the atmosphere. It cannot, therefore, be difficult to conceive, that by the pulmonary exhalation becoming habitually acrimonious or stimulant, and by the mucous secretion of this organ being impregnated with stimulant matter, it should be the first to suffer. We see the same thing happen to the kidneys, when the urine is impregnated with poisonous or acrimonious matter, introduced through the stomach, as sublimate, cantharides, or turpentine. What wonder then, that under these circumstances, the lungs are, at times, converted into scrophulous masses? that other parts undergo more active in-



inflammation and consequent suppuration? that some of the vessels give way in a part, which is so eminently vascular? that the glands of the mucous membrane are excited into increased activity, in consequence of which the cough and expectoration become perpetual?

All these symptoms doubtless add greatly both to the sufferings, and to the danger of the patient; but they are so little the cause of the fever, that much greater alterations in the substance of the lungs are perpetually occurring, attended, nevertheless, with little constitutional derangement. Large abscesses have been formed in them, upon the rupture of which extensive ulcerated surfaces have become exposed to the air, and the patients, notwithstanding, have suffered little fever during the formation of the abscess, or the healing of the ulcer; and have hardly been in danger, except from the hazard of sudden suffocation. Is it possible that tubercles, which have the

same external character of indolence, as a scrophulous gland in the neck, can cause a perpetual fever, which sometimes is not excited even by an extensive suppuration of the same parts?

It has happened, that persons have been pronounced consumptive at some periods of their lives, but have had the good fortune to escape the apprehended danger. In some of these, the lungs, after death, have not shown a vestige of morbid appearance to confirm the suspicions, that had been entertained\*. But still further, persons have died with every sign of pulmonary consumption, the cough, the expectoration, the emaciation, the diarrhoea, and the lungs, notwithstanding, have been found, on examination, to be perfectly sound†.

\* MORGAGNI *Epistol. Anatomic.* IV. 21. X. 11.

† LIEUTAUD *Historia Anatomico-medica.* Lib. i. Obs. 1496. Ib. Lib. ii. Obs. 404 et 404 (2). SAUVAGES *Nomenclologia*, Vol. ii. p. 451. VAN SWIETEN *Comment. ad BOERHAAVE Aphorism.* 1206. BENNET *Theatrum tabidarum*, p. 62. Lugd. Bat. 1733.—Other examples may be found in writers of good authority.

If the animal system be subjected to laws of the same uniformity, as the other parts of nature, one well authenticated case of this kind will counterbalance a thousand contradictory examples; and we may safely and firmly conclude, that consumption is a disease, originating, not in a morbid condition of the lungs, but of the whole system.

Considering the disease under this point of view, all the arguments already used, to prove constitutional diseases to be the offspring of deleterious matter, introduced into the system from without, may be readily applied to this peculiar, and very common form. Many circumstances in the history of the disease strongly corroborate the opinion, that water is the vehicle, by which this matter is principally conveyed into the body.

Consumption affects many of the same family, and should be ascribed, therefore, to something, which is common to them

all. There is often very great difference in the articles of diet used by different persons of the same family, particularly in that of the elder and the younger branches, and of the males and females. In the habit of using wine, spirits, malt liquors, animal or vegetable food, this is very obvious. Water, however, the basis and chief ingredient of such a multitude of articles, both of food and drink, is common to them all, and is, perhaps, the only matter, of which this can be truly affirmed. It has been commonly thought sufficient, to ascribe the frequency of consumptions in certain families, to an hereditary taint, and to suppose the germ of the disease to be implanted in the primordial structure of the frame. The hereditary predisposition to various diseases, must undoubtedly be admitted, as confirmed by the evidence of the senses and daily experience. But predisposition is only a greater aptitude than common to be affected by morbid causes. Remove the cause, and the predisposition continues

dormant. It is the impenetrable darkness, in which the causes of disease have been enveloped, that has rendered the appearances of predisposition so ominous and alarming.

In the case of husband and wife, the argument is more direct and more striking. The examples of husband and wife both becoming victims of consumption, where, at least, one of the parties have been exempt from the suspicion of hereditary predisposition are so numerous, as to have afforded strong ground for the opinion which has been prevalent, of the disease being contagious\*. It seems, however, a more legitimate conclusion, to suppose, that the sufferers have been equally exposed to some common cause,

\* This seems formerly to have been the common opinion in England. "Contagium hunc morbem propagat," says MORTON. (*Phthisiolog. Lib. ii. Cap. i.*) "Hic enim affectus" "(ut frequenti experientiâ observavi) lecti socios miasmate" "quodam, sicuti febris maligna, inquinat." MORGAGNI and VAN SWIETEN were of the same sentiments, and on the continent it is still the more prevalent doctrine.



acting with more than ordinary violence. It must, however, be a dangerous practice to sleep in a confined room with a consumptive person. The oxygen of the atmosphere is more rapidly consumed than in health ; and the emanations from the lungs cannot but be supposed to be noxious.

If we examine attentively the marks of the consumptive predisposition, they will be observed to be the consequence of a debility of the moving fibres, and a great activity of the excretory organs. For example, the narrowness and flatness of the chest is evidently the effect of debility of the pulmonary circulation. Universally, in the growth of the body, the containing parts are adapted with geometrical precision to their contents. If the action of the right auricle of the heart and pulmonary artery are habitually feeble, the lungs must be habitually less powerfully expanded ; their volume must be proportionally less, and the chest must in conse-

quence be of more contracted dimensions. That persons of this habit should so frequently become consumptive can excite no surprise, since the disease, in its exquisite form, is no more an aggravation of their constitutional peculiarities. But it is evident, that, as predisposition alone is not enough for the formation of the disease, so consumption is every day occurring, where no signs of predisposition are observable. Indeed, fair persons, who are so commonly the victims of this malady, would seem *a priori* to have the best chance of enjoying perfect health in our climate, since their complexion is that, which is most directly suited to northern latitudes.

The coldness of our atmosphere, and still more the variations, to which it is subject, have been thought capable of producing this disease. Doubtless, the consumptive are extremely sensible of the impressions of heat and cold, and of the variations of temperature. But heat and cold seem rather to be morbid forces,

acting upon diseased systems, and exasperating diseased actions, than to have the power of engendering the morbid predisposition. For what is the climate, that is exempted from this malady? It was familiar to HIPPOCRATES, whose treatment of it was nearly the same, as at present; it has been common in all ages, and I know not any European country, which is without it. If it be less common in very hot countries, the reason seems to be, that in such the cuticular secretion is more copious, than the pulmonary. In this case, acrimonious matter passes more abundantly by the skin, and gives occasion to a variety of cutaneous diseases, which are hardly known to us. The very worst species of these, the *Elephantiasis*, is, like the Consumption, evidently a disease of the whole constitution. For in this cruel malady, it is not the skin only which is affected, but the lungs likewise; since the breath is extremely offensive, and the voice is hoarse and impeded.

As Consumption is so much a disease of a particular time of life, it may be thought to depend rather upon some unknown and mysterious change, connected with that period, than upon any matter, which has been taken in more or less abundantly during the whole of life. But, in the first place, the fact is not true, to the extent commonly stated in systematic works. Though the number of the consumptive be much greater between the ages of sixteen and thirty-six, than in the other stages of life, yet there is, in truth, no period whatever, that is totally exempted from it. The essential difference seems to be, that as persons advance in life, the hectic fever is much milder, and the whole progress of the disease more slow. Secondly, the variety, which is observed in the forms of disease, and the consequent prevalence of this, at the period commonly assigned to it, may, I think, be readily explained on the principles I have laid down, in conjunction with the change,

which arises in the system at the period of puberty.

During the first stages of life, morbid activity, produced by excess of stimulation, is developed principally in those parts of the system, employed on the growth and modelling of the body; that is to say, in the actions of the extremities of the arteries, and of the absorbents. The effect of the first escapes our senses, being shown only by the increase of the parts, which is common to the sound and the unsound. But that of the second, by reason of the structure of the lymphatic glands, is often obvious. These glands being overstimulated, lose their power, and become distended by the liquids, which ought to pass through them; these congregate by stagnation; and induce inflammation; but from the weakened powers of the parts, it is of the most indolent kind, and the restoration to health is therefore very slow and imperfect.



Under this form, we call the disease *Scrophula*; a form universally acknowledged as a common precursor and parent of pulmonary Consumption. As puberty advances, the activity of the absorbent vessels diminishes, with the utility which gave birth to it. We are now presented with an appearance demonstrating almost to the eye, that this disease is the consequence of excessive stimulation. Young people are observed to grow with extraordinary rapidity, and upon reaching their full stature, the pulmonary symptoms appear. In these cases, every body remarks, that such subjects have overgrown their strength.

At puberty this morbid activity becomes concentrated, as it were, to a point. All the organs have attained perfection, and all the actions are directed to the purposes of conservation. The morbid activity becomes confined to the excretory organs, of which the lungs is the principal. Through these is the stimulating matter

perpetually eliminated; but being as constantly renewed, the viscus becomes injured by excessive action, and the vital powers sink under the perpetual irritation and constant exhaustion.

If after a certain age, the system becomes less subject to Consumption, it is because the excreting organs are less active, and the mobility of the system is greatly impaired. Under these circumstances, large parts of the system are apt to become torpid or paralytic. Therefore if, after the consumptive period, the vital powers begin to give way, the forms of disease incline to dropical swellings, congestions in the bowels, *leucorrhœa*, hæmorrhoids, asthma, palsy, &c. The colour and countenance alter, inclining perpetually more and more to that, which is termed melancholic. Thus, the consumptive systems must in some respects be deemed the most perfect, since they perish from the excess of their own actions. In the chronic diseases of more advanced periods,

the powers themselves become impaired, and are in the end destroyed.

Though medicine has hitherto effected so little in the cure of Consumption, many circumstances in the history of the disease incite us not to relinquish the attempt as hopeless. We know, that many have arrived even at old age, who have been deemed consumptive the greater part of their lives. We know, that the most distinguished practitioners have been occasionally deceived in their melancholy prognostics; and that those even, in whom the disease has proved fatal, have frequently enjoyed long intervals of improved health. We know, that a sea voyage and change of climate have sometimes wrought unhopèd-for cures. But we have not been able to ascertain what, in these circumstances, is the peculiar change, whether by medicine, by food, by liquids, or by habits of life, which has directly effected the benefit; we are, therefore, still unable to imitate these cures, to select

the good, and to avoid the evil of the methods, which have proved the most salutary.

The very structure of the lungs encourages us to believe, that few cases are so deplorable as to exclude all hope, if a proper method of treatment can be fully ascertained. The volume of this viscus is very large, and may suffer much diminution without destroying life. By this contrivance we are enabled to converse and to use strong exercise, without impeding the purposes of respiration; so that persons in health, with sound lungs, have a considerable interval between the successive acts of respiration. Many have enjoyed comfortable health, in whom a large portion of the lungs has been destroyed; and in the most consummate hectic, the breathing is comparatively free and easy, during the remissions of the fever. If the fever, therefore, is sustained by matter received with the *ingesta*, as it has been ori-



ginally excited, it would seem, that if due attention be paid to these, it is hardly possible to assign a limit, *a priori*, to the restorative powers of the system.

To this opinion of the generation and support of the hectic fever, it has been objected, that we see this fever disappear, whenever the cause exciting it has been removed, though the *ingesta* continue the same. Thus, if it be excited by a diseased joint, let the disease be removed, or the limb be amputated, and the hectic will immediately vanish. But this fact proves only, that the *ingesta*, though they may have (as is evidently true) a very powerful influence over the febrile symptoms, are not the direct and immediate cause of its formation. Still they may indirectly and remotely lay the foundation of the *febrile diathesis*, and this diathesis may be corrected, or, perhaps, eradicated, by a diet entirely anti-stimulant. The fever itself is to be esteemed a con-



stitutional process, and, as such, varying with the occasions, which have given rise to it.

Even in the last stages of the disorder, there hardly appears to be any real destruction of the nervous energy. It often happens in this and other disorders, attended with fever, that as the strength sinks the fever rises, and becomes more violent. It seems impossible to explain this common phenomenon, by any supposed laws of action and reaction, accumulation and exhaustion of sensorial power. Nor is it the arterial system only, which is excited to morbid exertion in the hectic fever: the muscular power also acquires, at intervals, a temporary energy, and even the mind receives an unnatural vigour, as is shown by the extraordinary vivacity and delirious spirits, so characteristic of this disease. It seems doubtful, from these appearances, whether the sensorial power is really destroyed in any, even in the last stage of Consumption. Death seems

to be occasioned, often, perhaps, from the injury done to the substance of the lungs, as the erosion of a large blood vessel, or bursting of an abscess, but most commonly by the inanition and collapse of the vessels, in consequence of the profuse and long continued evacuations.

Change of air, or, to speak more correctly, change of residence, and milk diet have, in all ages, been the grand refuge of the consumptive. As we send them to Lisbon, Naples, or Madeira, so from Rome they were sent to *Tabiæ\**, or to *Alexandria†*. We attribute the benefit to the warmth of a southern latitude; the ancients thought it due to the removal into a drier or a denser air. The utility of milk has been at all times acknowledged. In the worst cases, making it enter as largely as possible into the aliment, has palliated the symptoms, and has seemed

\* Upon Mount Vesuvius. GALEN, lib. meth. med. 5.

† CELSUS, lib. 3. cap. 22.

to protract the disease. But it may be doubted, whether the use of it has been carried by us nearly to the same extent, as was formerly practised; and whether, on this account, we have not often failed of reaping the full advantage of it. “ Let  
“ all those, who spit blood, (says TRALLIAN\*) “ use milk; for neither medicine, nor food, nor any thing else is  
“ so proper and useful to them, as milk :  
“ those who, from the first, have constantly lived upon *nothing else* for a  
“ length of time, have all perfectly recovered.”

Where the stomach will admit of it, there can be no doubt of the propriety of this advice, and that it will often have the effect desired. But to many, milk seems absolutely indigestible; it oppresses the stomach, and occasions heartburn, flatulence, drowsiness, and headach. Besides, it cannot quench thirst, which, in hectic

\* Lib. vii. Cap. i. p. 304. DE HÆMOPTYN.

fever, is so urgent. The usual resource has been to dilute the milk with water, which, on the principles laid down, is wholly inadmissible. Instead of this, -it may be converted into whey, which may be made the vehicle of any agreeable or nutritious matter, as cocoa, chocolate, rice, &c. I believe this to be a diet much better adapted to the consumptive, than the entire milk. It seems very probable, that whatever is noxious in the milk, (for this secretion must possess the qualities of the nutriment of the animal, which secretes it) is precipitated with the curd. This simple method may be readily adopted in situations, in which it is impossible to procure distilled water. I have already shown it to have an effect very nearly as good, in a case of chronic indisposition. (p. 78.)

In considering the diet of the consumptive, I cannot help expressing a doubt, whether wheaten bread is a proper article to be used largely, particularly by those

who are exquisitely hectic. The labourer finds such bread to be very heartening, as he terms it; he feels that he can work upon it better, than upon any other vegetable nourishment. This is strong evidence, independent of that afforded by the chemical analysis of the flour of wheat, that bread approaches to the nature of animal food, and causes a general and powerful excitement—that condition, which in hectic fever is already in excess. It seems then upon good grounds, that a preference is given to mucilaginous and pure farinaceous substances, as sago, rice, potatoes, arrowroot, &c. On the same grounds it is, that the *Lichen Islandicus* has recently obtained considerable repute. I believe it to be an useful auxiliary, both on account of its medicinal and dietetic qualities.

Such is the view, which I have been induced to take of the more ordinary symptoms of Pulmonary Consumption. I think these symptoms in no respect repug-



nant to the doctrine, that the disease is artificial, and that it has the same origin, as the great body of Constitutional Diseases. A more interesting task remains; viz. to relate how far this doctrine has been confirmed by experience. I regret that the evidence, which I have to adduce on this head, is not so strong as I wish. The instances, indeed, in which I have applied the method I have laid down, have been more numerous, than in any other disease; but I have not, as yet, had the opportunity of using it for a due length of time, and with proper regularity, in any strongly marked and confirmed case. At the same time I must add, that I have not met with a single occurrence, which has, in the smallest degree, tended to shake my opinion: on the contrary, the method has uniformly shown its power more speedily in this, than in any other disease. I shall relate, briefly, both the good and the bad success, which have hitherto occurred.

CASE

## CASE I.

In one instance it has shown its prophylactic powers completely. A lady had, for several years, been confined to the house, the whole winter season, with pulmonary complaints, and those of great severity. During the summer, and by the aid of going into the country, she regained pretty good health; her cough disappeared; but some habitual oppression of the breath remained. The autumnal cold and residence in London, had brought back the usual precursors of her winter complaints. She adopted my method about the middle of October: for a month she remained much indisposed, particularly with stomach complaints and headaches, when she became (to her own feelings, at least) quite well. She has continued so between three and four months, with the exception of one cold, which occasioned her a short confinement. This, though of very little severity, brought back, for

a few days, the old pains in the chest, which she had been accustomed to suffer.

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### CASE II and III.

A young man, who had every symptom of confirmed *Phthisis*, but who was not reduced to a state of great weakness, followed this method for three weeks. In this time the perspirations were checked, and he experienced a great improvement in strength, spirits, and countenance. He had procured an eighteen gallon cask \* full of distilled water, to prosecute the trial; but as I have neither seen nor heard of him since, I can say no more than that the improvement, in so short a time, surpassed my expectations. This was in January, 1804.

\* This Water should never be put into a cask, as it contracts a disagreeable taste from the wood, but should be kept in perfectly clean earthen jars, and, if with a considerable surface exposed to the atmosphere, it is so much the better.

Another young man, with very decided symptoms of approaching *phthisis*, experienced immediate relief both to the stomach and lungs, and speedily recovered. But as he had been ill only two months, and had not been confined to the house, I do not think it worth while to enter into further particulars.

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#### CASE IV.

The following is the worst case in which this method has proved successful. The pulmonary symptoms were not confirmed, but the nature of the disease was wholly unequivocal.

Mr. BURGESS, an ingenious young artist, aged about 20, had lost a sister of pulmonary consumption. He was himself troubled with pains in the side, breast and stomach, dyspnæa, emaciation, and a short hacking cough. He had perceived his breath to fail upwards of a twelve-

month, so that he was not equal to his usual exercises, nor could make a full inspiration. Besides these habitual symptoms, he had suffered two or three febrile attacks of great severity, but in which the abdominal *viscera* seem to have been affected more than the pulmonary system. He entered upon a course of distilled water, just as he had passed through an attack of this kind, but whilst he was still confined to the bed. He continued to recover gradually and uniformly; the breath strengthened, the pain of the side was removed, that of the breast and stomach gradually wore away, and at the end of six or seven weeks, he found his respiration to be more free than it had been habitually, before his last febrile attack. He persevered in the use of this method about twelve weeks, when he considered himself to be entirely restored. I saw him about two months afterwards, with every appearance of perfect health, in which state, I understand, he has remained to this time.



This took place during the middle of the summer of 1804, a season, which, doubtless, tended much to favour and accelerate the cure. The course was discontinued much sooner than I had wished; for which reason I cannot help entertaining doubts of the stability of this recovery.

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These examples are sufficient to prove the power of this method in consumptive cases, and to induce a confident expectation, that the disease may, in its early stages, be made to yield readily. But in deep and confirmed cases, where the substance of the lungs is greatly injured, and where the strength is greatly impaired, a speedy restoration cannot be expected, and the event must be regarded as precarious. In all, however, upon whom it has been tried, it has shown a great degree of power. I shall briefly notice three cases, in which it failed to cure.

## CASE V. and VI.

I attended, with Dr. FRAMPTON, a young man, who used this method sixteen days. The pulse was 130, full and strong, but we thought the period for venæsection was past. Before he died, the pulse fell 10 strokes in a minute, he scarcely sweated at all, and the expectoration was diminished. But after twelve days, so much inflammation came on the lungs, that the respiration became laborious, in which condition he died.

In a woman also, who died, after using the method twelve days, the pulse was lowered, and the sweats almost removed, till the last day of her existence. Her dissolution seemed occasioned more by the death of the stomach, than the oppression of the organs of respiration.

## CASE VII.

The following case proved fatal, after the patient had put on very strong signs of recovery.

A young woman, aged twenty-two, a servant to a lady at Pimlico, had been afflicted with severe pulmonary complaints during the winter of 1803-4. She became better in the spring; but at the beginning of the summer, her disorder returned with increased severity. She was of a deeply scrophulous habit; the tonsils were schirrous, and, from the tension and foreness of the *abdomen*, there was reason to suspect the mesenteric glands to be diseased. She had expectorated a large quantity of blood, and had every symptom of pulmonary consumption; the strength, though greatly depressed, was not so far gone, but that she could walk considerable distances. After using the regimen eight weeks\*,

\* This trial was made under the care of Mr. REECE, of Henrietta-street, who, from seeing the good effects of

the strength and respiration were much improved, and the sweating left her. The expectoration had become more free and copious, the matter thrown up was still tinged with blood; the cough was more full and deep. Unfortunately, a young gentleman of the family was, at this period, brought home with a dysentery, which proved fatal; this young woman suffered much fatigue from the attendance, and caught the disease. However, she recovered, and the pulmonary complaints still diminished, the expectoration being no longer bloody; the tonsils were also softer. She now went into the country, with directions how to proceed, according to the principles I have laid down; and I have reason to think she adhered to them. The accounts received from her were still favourable, but, notwithstanding, after four or five weeks, intelligence arrived of her death. She used the regimen twelve

this regimen in the case of the Rev. Mr. W——s, (p. 83.) has applied it extensively. He also put a seton in her side, and gave her suitable medicines.

or fourteen weeks, but, for a part of the time, particularly during the dysenteric attack, not with perfect regularity.

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I hope very soon to be able to offer much more decisive evidence on this most important subject. In the mean time I am glad to avail myself of an authority of the first weight, to screen the opinions which have been advanced, from the charge of extravagance and presumption.

“Potui optissima erit (says the venerable  
 “HEBERDEN,) aqua pura, qualem præ-  
 “bent fontes montis Malvernensis, vel  
 “distillata. Quæ vero copiam magnam  
 “habet calcis, et acidorum mineralium,  
 “veneno pejus est vitanda; cum hujus-  
 “modi aqua, ut mihi videtur, corpori  
 “præcipue inimica est, glandulas lymphaticas  
 “impediendo, et exulcerando, etiam  
 “in adultis, et qui ab omni labe strumosâ  
 “liberi sunt. Porro, hæc vitia, nisi fallor,  
 “vidi aquæ purioris usu discuti\*.”

\* HEBERDEN Commentarii, p. 327.



But there is strong and direct evidence, of this very disease having been produced by impure water, and that sanctioned by a name sacred to science, that of the illustrious HALLER. In a paper\*, now published more than half a century, he relates the circumstances of a particular spot, where this disease was extremely prevalent. In one particular farm-house, there had occurred thirty deaths in the course of sixteen years. Of these, fourteen had been known to die of consumption. The diseases, which had been fatal to the remaining sixteen, were not ascertained. Those who lived there, at the time of these observations, had all a consumptive appearance. He examined very minutely the customs and manner of living of these people, but he could not find that they differed, in any respect, from those of the same country and station. He concluded, therefore, that the water which they used, was the cause of this great mortality. The house was in a

\* Shwenck Acad. Handl. 1750, n.º 4, p. 298.

low situation, open on one side; on all the others surrounded by mountains. A stream passed near it, of which the current was so slow, that it seemed almost stagnant. Out of this they drank. The water was fetid, offensive, and so full of thick matter, as to have its transparency destroyed. By boiling it deposited a copious precipitate. Can it be doubted, that, in this explanation, a cause has been assigned, adequate to the effect? Let me ask again, is not the production of disease, a process as regular as the growth of the animal, or the revolutions of the seasons? If, in one example, the proof of the origin of consumption has assumed almost the force of demonstration, what difficulty is there in supposing that it may be the same in all?

But HALLER was far from thinking with HEBERDEN, that the mischiefs from unwholesome water were occasioned merely by the lime and mineral acids, that may be found in its composition, substances which, in the form in which they exist in

water, are used abundantly, without any signs of their being injurious. The *fetid* matter is that which he suspected. In his great work, he throws out the same suspicion. “River waters,” he says, “and those which are turbid, are purified by the use of the filtering stone, or of sand, or sponge, or by long rest, from earthy matter, but not from *putrid contamination*\*”. A fact related by GMELIN has established, in a particular instance, the poisonous nature of this putrid contaminating matter. The river Ussolka, in Siberia, overflowing its banks, forms pools in the neighbouring plains. After a part of the water has been frozen, what remains fluid has a nauseous taste, so as to be unfit for use. The cattle which drink of it are often seized with diseases, and some of them even die in consequence†. Can that which is a poison in a state of concentration, be made innocent

\* HALLERi Physiologia, Tom. vi. p. 243.

† GMELIN Reise durch Sibirien. Tom. iii. p. 396.

by dilution? May we not also, from this example, receive a useful hint, how to obtain, in abundance, water sufficiently pure? Would not the mere melting of ice furnish enough, and that so free from contamination, as to have no sensible bad effect upon the health.

I think it right to add, that two patients, labouring under *phthisis pulmonalis*, have been treated, according to the method I have laid down, in the infirmary at Hereford, under the care of my friend and relation Dr. BLOUNT, senior physician of the infirmary. Both cases were of the worst possible description. In one the disease proved fatal, after a trial of about three months; in the second, who has been treated nearly as long, as no unequivocal signs of recovery have as yet appeared, it is probable that the result will be the same. But in both of these I am informed, that the regimen showed the same power over the consumptive symptoms, as in those who have been under

my own care. The perspirations were removed, the expectoration much diminished, the hectic fever greatly assuaged, But the strength could not be restored, and, in consequence, death was inevitable.

In a third case, of long standing, but in which the symptoms assume more the form of *asthma*, treated by the same gentleman, it is expected that the patient will be restored.

I have clearly observed, that in cases both of Pulmonary Consumption and others, where there is great weakness, that, for a time, the debility has continued to increase. This circumstance evidently forms the natural limit, which must bound the utility of this practice, and, indeed, of any other, however well adapted to the end proposed.



## CANCER.

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EVEN this most tremendous of human calamities, I cannot help considering as deriving its origin from the same source, as other Constitutional Diseases. I proceed, therefore, to lay down the grounds of this opinion, and to relate the progress that has been made towards its cure or palliation. The exquisite sufferings with which it is commonly attended, the horrible nature of the disease itself, and the very precarious relief afforded by surgery, have concurred to direct, most earnestly, my hopes and my attempts, to the relief of the victims of this cruel malady, and, I rejoice to say, with a degree of success, that has hitherto rather exceeded than

fallen short of my expectations. Doubtless, the same considerations have stimulated the zeal of benevolent individuals, to form particular establishments for the treatment of these patients. No one can withhold applause from the motives of these humane exertions; but can we feel the smallest surprize, that they have only tended to confirm the experience of all ages, by proving that, in this disease, medicine alone is wholly inert and unavailing? We cannot, by medicine alone, cure a scrophulous gland, though the powers of the constitution are equal to the task, since, at length, it often disappears spontaneously. We cannot, by medicine, cure Pulmonary Consumption, though the subjects of it are in the flower of their age, and every motion seems directed to the conservation and restoration of the system. What chance then can there be, that medicine alone should put a stop to the ravages of a disorder, in which, commonly, there is not a single action, either local or constitutional, which tends to health? If

medicine could effect such a cure, it must be such a one as would renovate the powers of the system, and which would be equally powerful in other diseases, at present incurable—such an one as has not hitherto been discovered, and which, probably, exists not in the store-house of nature. What can be done by a complete change in the habits of life, remains still to be tried; from the hopelessness and misery of their situation, these sufferers are the most proper of all to attempt this change, and not for their own sakes only, but for the sake of others; since, if any relief were obtained in these cases, the example would have the most powerful influence in other diseases, less terrible, indeed, in external form and features, but not less fatal in their event. Let us first consider, for a moment, what reasons may be found in the history or well-known circumstances of the disease, for thinking such relief not impossible.

I shall say nothing upon the external

signs of this disease, or the internal structure of the affected parts; as those, who are best informed on these subjects, acknowledge the difficulty of discrimination between cancerous and other tumors, and the variety in the appearances of the parts, which have been said to be affected with carcinoma\*. It is more to my present purpose to enquire, whether it be not truly a constitutional disease.

However great may be the local predisposition of particular parts to this peculiar degeneration, I think it cannot be doubted that there is also a constitutional disease, which renders the system unequal to the restoration of the diseased parts. The almost uniform ill success of the operation, the recurrence of the disease either in the same part or in others, different and often distant parts of the

\* On the hypothesis of Dr. ADAMS, that Cancer is caused by a peculiar species of Hydatid, occupying the adipose membrane, it is obvious to observe that supposing it true, it still remains to enquire what is it that makes this part in some a proper nidus for the Hydatids, and in others not.

body being affected at the same time, these facts all concur to establish this doctrine. There is no necessity for insisting on this point more fully, as this opinion is the more prevalent. It is of far more importance to enquire, whence is derived the *Cancerous diathesis*? Is it from a poison introduced from without?\*

Now it is well known, that these diseases are, as in Consumption, almost always preceded and accompanied by a great derangement of the digestive organs. Sick head-achs, flatulence, vomitings, acute colicky pains, and a train of those symptoms, which are called bilious, are apt to harass them, often for years before the appearance of Cancer, and to recur

\* The hypothesis that the poison of Cancer is arsenical, is not entirely new. Serjeant WISEMAN on this subject says, "I think the matter of the Humour to be in fault, which by some error in Concoction became sharp and corrosive, (it may be *arsenical*, as appears by the Sloughs we sometimes finde made in a night.)" WISEMAN'S Surgery, Book 1. chap. 21.



frequently after its formation. In this, therefore, as in so many other constitutional diseases, the foundation seems to be laid in the chylopoietic viscera, and, therefore, probably in the matters applied to the chief of them, viz. to the stomach.

If it be objected, that in this and other constitutional diseases, the stomach sometimes seems unaffected; I answer, 1st, That the exceptions are rare; and 2dly, That they do not disprove the inference I would establish: for the stomach, and, probably, every other organ accommodates itself to habitual irritations, which are, therefore, not accompanied by consciousness. Sensation is produced, only when the irritation is excessive, or the organs endued with great sensibility. In fact, few persons in health feel their stomachs before they are thirty; and few are without such a feeling after they are forty.

In the progress of the disease, and as it draws to a close, the stomach complaints

become more severe. Often food is entirely rejected, and I have seen the same aphthous state of the *fauces*, with excoriation of the tongue, extending down the throat and the whole intestinal canal, as distinguishes the last stages of *phthisis pulmonalis*. At this period, there is an accession of cough, and the respiration becomes difficult, even after operations, which had been more successful than common, and after which there has been no return of the local disease. Nothing can show more strongly, that Cancer is chiefly a Constitutional Disease, since death is occasioned not by external, but by internal causes.

This affection of the respiration, is not attended with any proportionate disease of the structure of the lungs\*. The scientific writer, to whom we are indebted for this observation, says, that “ of late I  
“ have scarcely doubted, but that the dis-

\* ABERNETHY'S Surgical Observations, p. 75.

“ turbed state of the respiration has arisen  
“ from an affection of the liver, which  
“ almost constantly occurs in the last  
“ stages of carcinoma.” But is it not as  
reasonable to suppose, that both the state  
of the respiration and the condition of the  
liver are connected with some common  
condition of the system, as that the cough  
should arise from some inexplicable sym-  
pathy with the disease of the liver? Be-  
sides, I know that it is the opinion of this  
discerning physiologist, that not in Cancer  
only, but in Pulmonary Consumption,  
the liver becomes diseased, and gives rise  
to many of the symptoms. This is allow-  
ing an analogy in the causes of each dis-  
ease, to the full extent to which I wish to  
carry it.

But there is an essential and constitu-  
tional difference in the subjects of these dis-  
eases. In the consumptive there is an ex-  
cess of mobility and of action: on the  
other hand, in the cancerous there is most  
commonly a torpor and immobility per-

vading the whole system. They are often absolutely without fever, and where there is a species of hectic, it is comparatively mild. These differences are founded, I presume, on radical differences in the system, differences which may be observed among members of the same family, brought up in the same habits, from the earliest period of their lives.

This torpor pervading all the system, prevents those abundant critical secretions, which so strongly characterize the pure consumptive hectic. But still it happens, that particular parts, placed under peculiar circumstances, will occasionally betray a similar disposition. It has often been observed, that after the extirpation of a cancerous breast, the discharge has been so great as to exhaust the patient, who has perished of a true marasmus. The same has occurred in other great operations, or glandular diseases arising spontaneously. Such constitutions may be said to possess the consumptive diathesis,

though the consumptive action does not take place in the lungs, but is transferred, as it were, to some other part of the body.

It is greatly to be lamented, that in so common and so deplorable a malady, the histories should be, even to this day, so defective. It is asserted, by one of the most competent judges of this subject (Mr. JOHN HOWARD) “ that it would be difficult to point out three cases of cancer of the female breast, in which the local appearances and symptoms, produced in the system in general, are detailed in a correct manner, from the beginning to the end of the disease.” Still more scanty are the observations, which have been made on the connection between this and other diseases. It seems allowed, however, that scrophulous habits are the most common subjects. Numerous instances of this are given in the tract, from which I have extracted the foregoing remark\*. It has fallen in my own way

\* See the Notes to “ The Plan for the relief of Cancer at the Middlesex Hospital.”



often to meet with Cancer and Consumption in different members of the same family. Cancer and Gout are united, not uncommonly, in the same subject.

Mr. HOWARD has insisted too on the affinity between Cancer and Leprosy. That between Cancer and Elephantiasis has been observed many ages ago by GALEN. On the latter disease he has made a remark, which may be transferred to the former with strict justice, supposing this affinity to be real. He presumes the Elephantiasis to be the joint effect of climate and diet. Hence, he observes, that it is common in Alexandria, but in Germany and Mysia it is rarely met with. Among the *milk-drinking* Scythians (γαλακτοπόταις Σκύθαις) it is almost unknown\*. These Scythians lived in about the same latitudes as the Germans and Mysians, and, therefore, the efficacy of their diet is the more striking.

\* GALEN Method. Medend. ad Glauconem.

The antient physicians were convinced, that schirrus and cancer are constitutional diseases, and they expressed their conviction by attributing them, in common with many others, to an excess of atrabiliary matter in the constitution of the fluids. Let us for a moment examine the foundation of this hypothesis, which is treated with so much contempt by the great majority of modern theorists.

It is obvious, that the serum of the blood in many persons contracts a tinge of a deeper or of a lighter yellow, and that the skin receives its hue very much from this discolouration of the serum. In the cornea of the eye, this may be observed most distinctly, as this part receives its colour from the serum only, and it is often very yellow, when there is no suspicion of any real bile having been absorbed, and diffused through the mass of fluids.

But the secretions betray this discolouration much more strongly. The perspi-

ration blackens the linen, and where it collects in any quantity is itself black. The soil on the hair is of the same colour. The *feces* are in many persons, particularly in those much subject to costiveness, constantly black. This discolouration of the secretions is in part contracted after their separation from the blood, and is obviously a change effected by contact with the atmosphere. Thus we see the clothing round the neck, where the air has access, the most and the soonest discoloured. It is still more evident in the extremities of the mucus, which may be expressed from the cutaneous glands, and which vulgarly are called *worms*; in these the part exposed to the air is black, whilst the remainder is yellow or white; the blackness extending below the surface shows, that it is produced by the chemical agency of the air. The lips too, after sleep, are often covered with a black *fordes*, and, doubtless, the matter, which incrusts and darkens the teeth, is of the same nature.

I think then there can be little doubt concerning the true nature of the *atra bilis*, which has occasioned so much controversy in the schools of medicine. I believe it to be the mucus of the intestines, or some matter involved in and eliminated with the mucus, blackened by the air.

There is little difficulty in comprehending how the air gains access to the interior parts of the body. It is mixed with the food; it is entangled in the *saliva* which is constantly swallowed; and this humour, besides detaining a portion of air by its viscosity, absorbs oxygen by a chemical attraction\*. The description given of this substance cannot well be referred to any other matter. It is said to be "black, shining, and acrid †." This quality of *shining* must

\* THOMSON'S Chemistry, Vol. iv. p. 611. Second Edition.

† The ancients made a distinction between the *succus melancholicus* and the *atra bilis*; but still they were fundamentally the same, since they believed the first could be

belong to mucus; and, in corroboration of this, I have often observed that the blackness of solid feculent matter is only superficial, as if it were contracted from the surface of the intestines.

Mucus being destined never to re-enter the system, may be deemed a species of excrement, though adapted by its form, with that consummate wisdom, which is conspicuous in every part of the animal system, to answer useful purposes, before it ceases to be a part of the body. As it is evidently contaminated by atrabiliary matter, (for so in reverence to antient authority I would call it) other excrementitious fluids may be suspected to be also a vehicle of the same matter. A modern physiologist of great eminence deems the bile to be no more than an excrement from the blood. This secretion also is some-

changed into the second, in peculiar conditions of the system. See SENNERTI, *Med. Pract.* lib. 3. part 2. sect. 2. cap. 10.



times black, which will of course discolour the fæces throughout. This, however, is a much more rare occurrence, than the superficial blackness, I have mentioned.

I have dwelt on this subject, as these plain and palpable observations seem to me to rescue antiquity, and some of the wisest of modern observers, from the imputation of having framed an idle hypothesis, and having acted upon it, in discharging the most serious of human duties. That those systems, in which the signs of a great superabundance of this matter, that is to say, those in which there is a yellowness of the cornea, darkness and muddiness of the complexion, foulness of the teeth, or blackness of the fæces, are peculiarly subject to the most intractable diseases, is equally evidently to common observation.

But may we not go a step further, and say, that certain parts of the glandular system take upon them the office of eliminating this matter, and preserving thereby

the integrity of the body ? and that in different constitutions there are different parts, which serve this purpose ? If we examine the teeth, we may see that this deposit is made in some on the external surface ; in others, on the internal ; in others again it is still more partial : and I have seen very distinctly, that where this black deposition has been most abundant, the gums have been most unsound. In confirmed scrophula, the whole upper lip and mucous membrane of the nose secrete an acrimonious matter, and become swelled and inflamed from the irritation it occasions. How, indeed, is it possible to explain the injury experienced by stopping habitual discharges, without supposing that something noxious is constantly passing off along with them ? That any matter which pervades the whole mass can be derived to a particular point, seems hardly consistent with the laws of the circulation. But that a certain *excess* of a matter, which is constantly present, may thus be got rid of, which excess, if retained, would prove

injurious, there is no difficulty in comprehending.

Now all these signs of the excess of what has been called atrabiliary matter can be removed by the course, which I have so frequently described. The foulness upon the teeth, and the blackness of the intestinal evacuations disappear: even the yellowness of the cornea can be removed, and the complexion be restored to its original clearness. Hence, therefore, all those appearances, which have given rise to this notion of the excess of atrabiliary matter, are clearly artificial, and the effect of the constant introduction of a foreign substance into the system, of that very substance, which I have denominated Septic Poison. This affords no feeble presumption, that all the effects, which can be justly traced to this matter as a cause, may also cease upon the removal of the cause.

In the subjects of the malady, which is

the immediate object of our enquiry, there are often no signs of melancholic temperament. But we may readily be deceived, if we trust entirely to observation of the countenance and complexion. In one example, which, happening to a near relative of my own, I had the opportunity of attending to with great minuteness, I never saw a complexion more characterised by the appearance of health. But this lady had been highly bilious for a series of years, and the intestinal evacuations were, as I have described, lumpy, dark, and sometimes of an intolerable fœtor. I should say, that the determination of the atrabiliary matter to the intestines, was the circumstance which kept the complexion so clear. The operation was performed on her with skill and success. But after a few months she became epileptic, and was so carried off.

As these patients are exposed to the causes of the excess of this matter, there can be no improbability in ascribing the

origin of the disease to this accumulation, or the action of a matter connected with it. The *plumbean* countenance, which in many has been found to be characteristic of Cancer, indicates, pretty strongly, that the whole habit is tainted, fluids and solids; the fluids in their composition, and the solids in their action, which, as it is the antient doctrine, so I doubt not it is the true.

On this ground, principally, have been founded the hopes and expectation, that much benefit might be received, even in this, the most intractable, and, in certain circumstances, the most tremendous of human diseases. These hopes have not been a little strengthened, by considering that Carcinoma, in its incipient state, is often stationary for years; and that, when it has ceased to be so, the progress is still so slow, as to afford ample opportunity for effecting a constitutional change. In ordinary cases, the vital parts of the body are uninjured, if the disease is not ad-



vancing quickly to a termination. Is it not owing to this very integrity of the *viscera*, that the parts; which are not essential to life; as the *mammæ*, testicles, &c. give way first? And is it not for the same reason, that the disease continues such a length of time, before it proves fatal? However this may be, this condition of the vital parts cannot but augment our power of correcting the disposition, on which the disease depends.

But the constitutional disposition in Cancer makes it probable, that great patience will be required, before unequivocal appearances of amendment can be expected. The Cancerous diathesis is distinguished by a torpor of the vital actions and a defect of power: the consumptive by an excess of action and of energy. To repress what is exuberant is more easy by far, than to excite what is deficient. The operation of the pure waters of Malvern corroborates this remark. In cases where there are signs of much

inflammation, in cutaneous eruptions, for example, or in ophthalmia, attended with great heat, redness, and acrimony, they presently afford very great relief. On the contrary, in diseases of debility attended with coldness and want of action, as they produce no speedy signs of amendment, they have been deemed useless. “ In  
“ very lax habits,” says Dr. WALL, “ as  
“ in leucophlegmatic and anasarcaous  
“ cases, where the fibres and vessels have  
“ lost their spring and elasticity so much,  
“ that they cannot act against the cold-  
“ ness and *pondus* of the water, there it  
“ cannot do service\*.” So it must be in the Cancerous constitution. Before the actions of health can be renewed, and the processes of restoration begun upon, a change must be effected in the system, which, as it can only be done very slowly and gradually, will, undoubtedly, demand much patience and perseverance. It may be presumed, that if, for the first six

\* WALL on Malvern Waters, p. 105.

months, the disease can be kept nearly stationary, with any evident change for the better in the general state of the health, it is as much as can be reasonably hoped for. Indeed, this is what I have found to be pretty near the truth, in the examples in which the method has been applied.

The dietetic plan should, of course, be seconded by every aid, that can be given by the science of the physician, and the skill of the surgeon. On this head it is not my purpose to enter into detail; and I believe it to be hardly possible to lay down any general rules on the subject. The subjects of Cancer possess great diversities of habit, which require corresponding diversities in the constitutional treatment, and probably too in the application of the remedies, general or topical, which have seemed peculiarly appropriated to the specific nature of their complaint.

It will be objected, that the very substance which is the basis of the Septic

Poison, and to the deleterious power of which I attribute the disease, is one which has been administered as a remedy, with some appearance of success. LEFEBVRE, JUSTAMOND and others, have even deemed it to possess a sort of specific virtue in these cases\*. But it is acknowledged, that whatever benefit has been apparently derived from the use of arsenic in Cancer, it has never been permanent. Its operation has been merely in consequence of its powerful excitement, in which it seems superior to every other substance, and which very power probably renders it ultimately injurious. It has commonly happened, that tremors and palsies have quickly succeeded the temporary and apparent advantage, that has been obtained.

\* Mr. JUSTAMOND in one case administered white arsenic, to the extent of two grains for six months daily, with apparent relief, which, however, was only temporary;—a strong proof, indeed, both of the real inefficacy of the method, and of the extraordinary torpor of the system in this disease.—See JUSTAMOND's account of his treatment of Cancers, &c. p. 43.

The condition of the limbs in the advanced stages of Cancer, is very similar to that which is produced by the immediate introduction of arsenical poison.

It by no means follows, from any thing that has been said, that this most active substance may not, in discreet hands, be applied occasionally to useful purposes. Torpor often arises in different parts of the system from temporary causes, to remove which arsenic is, perhaps, the most powerful instrument we possess. I should wish even its use to be extended to certain cases of great hazard, in which our means of relief are at present very feeble and inefficient; and suspect, from its extraordinary efficacy in intermittent fevers, that there are periods, in fevers arising from contagion, in which it may be advantageously employed. But wherever we are able to increase the real power and energy of the constitution, it cannot be doubted, that to do this must be far preferable to all the methods practised for ex-



citing the actions of the system, particularly by agents, which may be destructive to the frame itself.

I have had the opportunity of using this method in four cases; one of a diseased condition of the tongue, which was intractable by medicine; in a second of a diseased nose, which was still more threatening; and in two cases of genuine Cancer of the female breast. In none of them, as far as it has been tried, has it disappointed the hopes I had formed of its power. I shall relate the particulars of each.

### CASE I.

The particulars of this disease will be related under the article of Gout, in the words of the patient himself.

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### CASE II.

Mrs. MOORE, the wife of a respectable

tradesman in Portland-street, had perceived an aching pain in the left side of the nose, about a year and a half ago. It afterwards affected most the right side, and a kind of fissure appeared on the cartilaginous *septum* upon this side. The nose became stiff, and could not bear handling, without exciting pain; the nostrils were a little swollen; and though there was no appearance of inflammation, nor any redness, there was a perpetual sense of burning heat at the extremity. There was no discharge, but the diseased part was rather preternaturally dry. She consulted many eminent practitioners; among others, Dr. BAILLIE, Dr. HOOPER, Mr. ABERNETHY, and Mr. CLINE; but the disease continued to gain ground. The aching pain was almost constant and depressing, and it spread higher up towards the frontal sinuses. The general health was much broken, she had lost her flesh, the spirits were greatly depressed, the appetite was bad, the strength impaired, though she was still equal to many of her

occupations; and the countenance had that lurid and truly *plumbean* aspect, which is so characteristic of these diseases in their most suspicious forms.

She first attempted to use the regimen I have advised in the spring of 1804, and pursued it steadily for six weeks; but finding no benefit, and feeling an uncommon sense of weakness and lowness, she abandoned it. She afterwards was persuaded to take to it again, and finding her stomach easier, even from an imperfect adoption of it, about June she resolved to adhere to it with regularity. I did not see her from this time till the October following. She then complained, that the local disease was no better; she thought it even worse, and that the pain had advanced still higher up the nose. But she confessed that her health was better; the appetite, strength, and spirits, were all improved; the countenance, too, had lost its plumbean appearance, which was changed into simple paleness. Thus I was convinced,

that the constitution is susceptible of improvement in these diseases.

In another month the progress was more decided. The countenance was still more improved. The sensation of burning heat at the tip of the nose was gone; it had become more flexible, and she could bear handling it without uneasiness. The aching pain was nearly the same. At this time she went into the country, where she has remained ever since. Mr. MOORE informs me (Feb. 18, 1805), that the amendment has continued to be uniformly progressive. The appetite is quite restored, and the health is good. The aching pain is much diminished in severity, and it is confined to the extremity of the nose. The intervals of perfect ease are also of much longer duration. The anxiety and depression of spirits are quite removed\*.

\* I am very little anxious to enquire, whether this disease or that of the tongue (to be related below) would be called Cancer by surgical writers. It is quite enough for my purpose, that it was of such a kind, that the constitution was unequal to the cure.

## CASE III.

The following is, by far, the most interesting of all the cases, in which the cure has been attempted by the use of pure liquids, whether we consider the nature of the disease, which is wholly unequivocal, the very advanced stage at which the method has been adopted, or the very reduced and debilitated condition of the patient. Though I dare not, as yet, pronounce that this individual patient will be restored, the effects of the regimen have been so decided, as to give me great confidence, that in favourable subjects, the Cancer of the female breast can be eradicated.

The patient, Mrs. J——s, is about 45 years of age. She resides at a great distance from the metropolis. I saw her in the beginning of October, 1804. The other particulars of the history I have obtained from the account and letters of Dr.



BLOUNT, who recommended the trial, and from the letters of Mr. POWELL, of Weobly, Herefordshire, her surgeon, and Mr. J——s, her husband.

The circumstances of the local disease, when I saw it, were these. The whole of the right breast was converted into a schirrous mass, adherent to the side, of a stony hardness, and with an irregular tuberculated surface; but it was not of more than the natural size. The skin over the schirrous tumour was entire, and of its natural colour, but round the tumour it was elevated into spots, or empty vesicles; these were most abundant below the breast, and dispersed upon the side to the distance of several inches. Two of these vesicles had ulcerated: one of the ulcers had increased to the size of a half crown; this had callous edges, and a ferous fluid exuded from it, but not very abundantly. The other ulcer was of no more than the bigness of a pea. The glands of the *axilla* were swollen, and Dr. BLOUNT suspected the mesenteric glands to be in the same

condition ; but from what symptoms he formed his opinion I am not precisely informed. Mr. CAM, an eminent and very experienced surgeon of Hereford, had been consulted about the propriety of an operation, which, of course, he determined to be wholly unadvisable.

The constitutional symptoms were, if possible, still more unfavourable than the local. She had been long in a very feeble state of health ; the gums were loose and spongy, and hardly any teeth remained in the head ; the disease of the breast had been formed about a year and a half. The strength was much reduced, the extremities cold, she was emaciated, and had suffered pains like rheumatism, during which the lower limbs had been almost paralytic : the pulse was quick and feeble.

She began the course of distilled water on the 26th of June, 1804. Previous to its use, the strength had been sinking rapidly, and the local disease had been likewise gaining ground. The small ulcer

formed after it had been entered upon; but after the course had been continued a month, no further ulceration took place, and ever since that period the local disease has been almost entirely stationary. Dr. BLOUNT therefore thinks, “that from the ulcerative process there is no longer any apprehension.” The larger ulcer at the end of seven months, Mr. POWELL informs me, “is rather wider, but the discharge from it is diminished.” The breast itself is nearly in the same condition: the change, however, that has taken place has been for the better. This is the opinion of the patient, who is the best judge; and Mr. J——s says, “we have great reason to believe, that the complaint in her breast is much relieved.”

The effect upon the constitution has not been so satisfactory, though still it has been such, as not to exclude hope. For between four and five months the health continued to decline, and the strength to decay more and more. About the middle

of November, the general pains were so severe as to excite convulsions, and the strength was so much impaired, that her friends and medical attendants despaired of her recovery. But since that time, the health has been mending. The debility is still very great; but she thinks herself better, and is thought so by her friends. She perseveres in the regimen advised, and takes medicines, consisting of calomel and fulph. aurat. antimon. æthiops mineral, and nitre, by the prescriptions of a noted London doctor, who, however, has never seen her, nor can (as I believe) have been ever correctly informed of the circumstances of her case.

I hope to be excused for entering so much in detail on this case. It is clear, that, had it been allowed to follow its usual course, the skin having actually begun to partake of the disease, every one of the spots or vesicles would have become the centre of an ulcer, which would have spread, and the whole side

would have been excoriated. Under these circumstances, the patient must have sunk many months ago, exhausted by the discharge and worn out by the irritation. As therefore in this case, the local disease, which was becoming rapidly worse, has for upwards of six months been kept stationary, and as life has been evidently prolonged for many months, and the appearances under the worst circumstances have improved, whatever may be the event, I cannot but think myself justified in the confidence I have expressed, that in favourable subjects, the Cancer of the female breast can be eradicated.

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#### CASE IV.

In a second instance, the influence of this regimen upon a cancerous breast has been evident to my own eyes. The patient, Mrs. S——, a respectable woman, aged 56, has had a scirrhus tumour of the right breast eighteen years. For the three



last years, the skin over the diseased breast has become red, the tumour adheres to the side, and has every characteristic of the true Cancer. The glands of the *axilla* are swollen. At the superior part of the tumour there was a portion which, from the florid redness of the skin, heat and tumefaction, I judged to be in a state of active inflammation. She used the course of distilled water a month. In a fortnight's time the redness of the skin over the inflamed part began to diminish, and continued to do so (though with some fluctuation) as long as she persevered in the course.

Whilst living in the common way, but avoiding fermented liquors almost entirely, except the local disease, this patient felt in a comfortable state of health, and her spirits were good. But instantly upon confining herself to the distilled water, she experienced considerable general uneasiness. At the end of the month, she had so great a sense of debility, languor

and lowness, accompanied with so much paleness of the countenance and shrinking of the features, that she renounced the trial. Nor am I surprised, that I did not possess sufficient authority, to make her believe, that these symptoms (they were too mild to be alarming) should be considered as proofs of the activity of the method, and furnished the strongest motive for perseverance.

## GOUT.

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HOW much soever the humoral pathology has been decried, since the doctrines of CULLEN, founded upon those of BAGLIVI and of HOFFMAN, have been prevalent, the notion of Gout being occasioned by the action of a morbid matter is by no means eradicated. Even within these few years, the opinion of the excess of acidity has found partizans; and I believe it is full as rational as the more abstruse explanations of metaphysical theorists. As the celebrated teacher of the Edinburgh school has laboured with singular earnestness, to destroy this opinion, of the existence of a gouty humor, it may be worth while briefly to notice the arguments he has adduced.

1st. " There is no direct evidence of  
" any morbid matter being present in  
" persons disposed to gout." Nor is there  
any evidence against it, since we have not  
known how to analyse the blood. " There  
" are no marks of any morbid state of the  
" fluids, previous to the attack." Nor are  
there any such marks, before the secondary  
symptoms of syphilis, for example, though  
we are certain that, in this case, a poison  
is circulating through the system.

2d. " The suppositions concerning the  
" nature of this matter have been various  
" and contradictory." Such will ever be  
the case in the absence of experiment,  
and the supposition itself may, notwith-  
standing, be founded in truth.

3d. " It is inconsistent with the pheno-  
" mena of the disease." This is asserted  
without proof, and no more reasonable ex-  
planation has as yet been offered.

4th. " The operation of this matter

“ ought to be uniform ; whereas it is stimulant in the limbs and sedative in the stomach.” The true operation of the matter is *previous to the fit*, when it is debilitating in the limbs, as well as in the stomach.

The 5th objection only refutes a feeble argument, and the 6th, entering into the nature of hereditary diseases, would lead us into a discussion too extensive for this place, and very little to the purpose.

7th. “ It is useless and neglected in practice. When the gout has affected the stomach, nobody thinks of correcting the matter supposed to be present, but of restoring the tone of the fibres.” But may not tonics owe their power to a chemical action on the liquids contained in the stomach ? It is experience that has taught their utility ; of their mode of operation we are still ignorant.

8th. “ It explains nothing, without



“ supposing the matter to produce a  
“ change in the state of the moving  
“ powers; and this change, produced by  
“ other causes, explains every circum-  
“ stance, without the supposition of a  
“ morbid matter.” But it is an un-  
doubted truth, that the blood is the great  
agent upon the moving powers, either di-  
rectly, or through the medium of the sen-  
sorium; and therefore a change in its com-  
position must be infinitely more powerful,  
than any other cause whatever. Besides  
this, no explanation of the phenomena of  
the disease has yet been offered, that is at  
satisfactory to intelligent enquirers.

Lastly, “ It is also superfluous, because  
“ without any such supposition, I think the  
“ disease can be explained in a manner  
“ more consistent with its phenomena,  
“ with the laws of the animal economy,  
“ and with the method of cure, which ex-  
“ perience has approved.” To answer  
this objection, it would be necessary to  
analyse the Cullenian theory of Gout—a

useless task, as, I believe, no physician deems it deserving of attention, or thinks that it explains a single fact, either of the history or treatment of the disease.

Such is, in truth, the sum of the reasoning against the humoral pathology ; for the same arguments may easily be transferred to all other diseases : of how little weight they are, I leave to the judgment of the enlightened enquirer\*. In the case of Gout, the doctrine of its being caused by a morbid matter has been much weakened by its having been supposed, that in the fit this matter is deposited upon the extremities, and so evacuated ; a useless and not very intelligible hypothesis. My theory of Gout, if so simple an explanation merits the name, is as follows :—

\* It is said that Mr. COLEMAN has given a sound horse the glanders, by transfusing into its veins the blood of a glandered horse. Wherever the causes of disease have been really detected, they have been uniformly found in the operation of some foreign matter on the body, as marsh miasma, putrid effluvia, variolous, morbillous, syphilitic poison, &c.

In the gouty constitution the poison, artificially introduced, makes the bones radically diseased, as in Scrophula, and this disease begins at the extremities, and affects the joints and their appendages, more than the central parts of the bone. This condition of the parts exists as much during the intervals, as during the paroxysms of Gout. When the constitution is vigorous, fever fits are produced for its relief, during which the diseased parts inflame, and by this inflammation are sometimes restored. The power of poisons to produce a disease of the bones, is obvious in the action of the syphilitic poison, and of its counter-poison, Mercury.

1st. The first appearance of Gout is often produced by a long walk, or pressure on the foot. Here the disease is merely local, the consequence of the parts being unsound, and the fever is symptomatic.—  
2d. The same kind of accidents will bring on a gouty swelling at any time, in those who have had frequent fits.—3d. There

are symptoms of the feet being diseased before the fit, as coldness of the parts, cramps, swellings of the veins, &c.—4th. After repeated attacks the disease in the feet is permanent.—5th. In old patients the bones of the foot often becomes carious, the skin ulcerates, and the carious parts crumble away.—6th. Regular exercise on foot very much keeps off the Gout from the parts; but riding and carriage exercise has no such effect. It has even been asserted, that those, who write much, preserve the fingers so employed. All these facts seem strongly to point out, that the disease, first of the toe, and afterwards of the other joints is strictly local, and, of course, varying, as diseased parts are apt to do, with the condition of the constitution, more than parts that are sound.

This previous disease of the bones determines the seat of inflammation, whenever the occasional causes are applied; as a person with an unsound tooth will have a tooth-ach, or inflammation of the jaw

by catching cold. It is a common remark, that the circumstances which excite catarrhal affections in common subjects, cause gouty swellings in gouty habits.

Whilst, therefore, I contend for the existence of a morbid matter in Gout, I see no reason for supposing it to be at all peculiar to gouty subjects, or any other than the same Septic Poison, which I believe to lay the foundation of other Constitutional Diseases. And the relief received from the paroxysms I presume to be due, not to the inflammation of the feet, but to the changes induced by the process of fever.

That paroxysms of common inflammatory fever, assuming various forms according to the varieties of the local affection united to it, are very commonly a relief to the constitution is, I think, a matter of daily experience. Such are attacks of rheumatism, or erysipelas. These, too, are, like gout, often preceded by long conti-



nued *dyspepsia*, *hypochondriasis*, loss of appetite, general heaviness and torpor, headaches, &c.

As there is nothing peculiar in the gouty fever fits, neither is there any thing in the dyspeptic symptoms, which form so large a part of the habitual sufferings of the patient. The same symptoms, attended by all their concomitants, are to be found in a greater or less degree in many, nay in the greater part of chronic diseases. Nor are the more calamitous *sequelæ*, which are usual in the latter stages, when life is drawing to a termination, more than what are attendant upon decayed and broken constitutions, whatever variety there may have been in the form of the previous diseases, when the system possessed its original energies. Such are, for example, (I quote from the respectable authority of Dr. LATHAM) “the paralytic  
“tremors of the limbs, the convulsive  
“twitchings of the muscles, the relaxed  
“joints, the frequent syncope, the inter-

“ rupted respiration, the apoplectic vertigo, the œdematous extremities, the “ universal marasmus\*.” All these symptoms are to be found associated with diseases of different denominations, and may reasonably be attributed to the influence of something common to the whole tribe, and not peculiar to any single *genus*.

What is really peculiar and specific must be looked for in an original peculiarity of the constitution, rather than in the action of a peculiar matter. This peculiarity appears to have its seat in the actions of the stomach: but as we have but a very rude notion of the process of digestion, we can speak of it only in very general terms. The stomach however is commonly in such a condition as to bear stimulating applications, which seem almost requisite for the proper performance of its functions. This is so much the case, that even in a state of fever stimu-

\* LATHAM on Rheumatism and Gout, p. 71.

lant matters, as wine, spices, &c. are not injurious; at least, by no means in the same degree as in other constitutions. Hence, according to our present habits, gouty persons are placed between two rocks, so that if they steer clear of one, they almost inevitably split on the other. The use of stimulants eventually destroys the digestive organs, and accelerates the diseases attached to the latter stages of life. The abstracting of them frequently throws the system into a direct state of atony, from which it may be impossible to raise it.

This last condition has very often been the consequence of the milk diet indiscreetly undertaken. This course has stopped the paroxysms of gout, to the existence of which a certain vigour of the arterial system is essential. But it has not eradicated the gouty *diathesis*, for, on resuming the former habits, it has appeared again in its original severity, if the constitution has been sound; whilst in others,

it has induced a permanent state of atony and debility. There are numbers, however, to whom this experiment is impracticable, since to most gouty stomachs milk is absolutely indigestible.

The system which I have laid down, of confining the patient to the use of pure liquids, promises to give all the advantages of the milk diet, or rather to supersede it, by rendering harmless a reasonable indulgence of other habits. This practice strengthens and restores the digestive organs more powerfully and permanently, than any medicine can possibly do. Independently, therefore, of all theory, it may be expected to be particularly beneficial in a disease, the *fomes* of which is allowed by common consent to be seated in the organs of digestion. In Gout too, the whole frame, even parts the most remote, sympathise more directly with the affections of the stomach, than in other disorders. If therefore the stomach can

be radically restored to a healthful condition, there is little doubt that the whole body will be restored with it.

But, I am happy to add, this is not a theoretical speculation, framed in the closet, and annihilated by the first touch of solid experience. The first person (besides the family, which underwent the course I have related) who followed my advice is a gentleman, who had been long a martyr to this disease. He has now steadily pursued it about a year and a half, and the advantage received has, undoubtedly, far exceeded the expectations I had formed of its efficacy. He has thought right (from that principle of public spirit, for which he has been distinguished through life) to draw up a very minute detail of all the circumstances of his case, in two letters addressed to myself, which (with his permission) I here subjoin.



## LETTER I.

Rowdel, Suffex, September 30th, 1804.

My dear Sir,

You wish me to give you the most accurate detail of the effects of confining myself to the drinking of distilled water, which I now have done, since the beginning of September, 1803. You know how miserable a martyr I was to the Gout, which first affected me about thirty-five years ago\*. In the beginning I usually had it every year; for some years afterwards it attacked every other year; but the fits became more violent, of longer duration, and more universally diffused over my frame. The last violent fit I had I find marked in my almanack of that year, the 15th of January, 1802. I remained six weeks in the country extremely ill. I then thought it necessary, wrapt

\* The first symptoms of Gout appeared at the age of twenty-seven, but the first regular fit was at the age of forty, about twenty-two years ago.

up in blankets, to proceed to town for better advice; there I remained above a month confined to the house. The severity of the fit being somewhat abated, I returned again to the country, and did not recover the effects of that fit till the month of August following. In September, 1803, I commenced the course you advised of distilled water, under the greatest apprehensions of being again attacked the ensuing winter, as it was the the year I expected it. To my agreeable surprize, the only symptom I had of Gout that winter was, after a very long and fatiguing walk in London, to feel a slight attack in my heel, which lasted me three or four days; and once again in the spring I felt a gouty affection in the left hand for about a week. The extraordinary stiffness upon my ancles, which I had been subject to for a series of years, is totally removed. I can now take long walks without feeling any ill consequences from it, or any return of the Gout, which was never before the case.

I feared myself liable to be attacked by another and more serious calamity, which I felt yearly increasing upon me; I mean a diseased condition of the tongue. This uneasiness several years ago affected me by an extraordinary dryness, tingling and aching, particularly in the morning. On first waking, it appeared to me as something not belonging to myself; but as if it were a dried tongue put into my mouth, whose flexibility was impaired and almost destroyed. It has now in a great measure regained its moisture and flexibility; it has sometimes a tingling in the morning, but the aching pain is gone, though yet occasionally an uncomfortable feeling arises, particularly if I ever exceed a glass or two of wine, which is sometimes unavoidable from company.

A further circumstance I think necessary to mention, which may in some measure account to you for the rise of this complaint in my tongue. In the year 1778-9, I returned from the East

Indies for the last time. I came in a French ship, as all the English ones were departed. The passage was of eight months, and the ship wretchedly provided with fresh provisions and water. For a series of time we had nothing to depend upon but salt provisions, and those putrid and full of worms. This, I apprehend, was the cause of the general corruption of my juices; as almost immediately after my arrival in England, I was attacked with a very violent fever, which fell upon my lower gums, and deprived me in the end of all those teeth. Soon after I felt a circle rising and gradually extending itself towards the root of my tongue, occupying internally both the upper and lower jaw, including the tongue; this I occasionally washed with warm water and spirits of wine, which caused it to smart exceedingly, whilst the sound parts bore it without pain. This circle has been gradually decreasing, since I have drunk the distilled water; it is now confined to the lips and end of the tongue, whereas  
it

it was before getting gradually more and more towards the root of the tongue.

My stomach for a great many years was troubled with wind, acidity, violent heat, cramps and distention, with acute pain after eating. The acid I now feel very little, of distention none after eating: I have occasionally suffered the cramps, but the heat is gone. Within the last month the pain has been greatly relieved.

I had a feeling of perpetual tightness about the head, and often severe thumps, as if from external violence. The thumps I now seldom feel, and by no means so violent as they were, and the tightness has left me entirely.

In addition to this, I had all over my breast and shoulders a violent yellow scurfy and itching eruption, eating into the flesh; this is so totally removed, that nothing can be perceived of it but the vestiges in the skin, which I suppose will always remain.



I think it proper to add, that in the course of this summer, commencing about the hay harvest, I was seized with a most violent cough, attended with an enormous defluxion both from the head and breast, throwing up by cough a strong tough yellow phlegm. This made me somewhat apprehensive of an attack upon the lungs; but it is now almost gone, and instead of any ill result, I feel myself infinitely better in health, than I have been for the last twenty years.

My appetite, which has been always very bad, remains nearly in the same state; but this may perhaps arise from too sedentary a life, as I observe by travelling about I occasionally recover it. My bowels still continue constipated; and the sleep I get, though short, is perfectly sound.

I shall certainly persevere in continuing to drink the distilled water, having already found such great benefit from it; and doubt not in the end it will restore

me, as far as can be expected at the age of sixty-two years.

With regard to the use of wine, I confine myself to a pint of wine a day, never, if possible, exceeding it, and never finding any ill effects from it; if at any time I exceed that quantity, I am sure to suffer by it.

I am, dear Sir,  
your affectionate and faithful servant,

CHARLES GORING.

P.S.—On reading over this letter, I find I have not fully explained what I mean by my last fit of the Gout being so universally diffused: it occupied every one of the great joints of the body; ancles, knees, elbows, wrists, and shoulders.

*To Dr. Lambe,  
King's Road, Bedford Row.*

As several months have elapsed since this letter was written, he has favoured me with the following account, of what has since occurred.

## LETTER II.

My dear Sir,

A second\* winter is now passed without any fit of the Gout, though certainly I deserved one by my imprudence, in exposing myself to the inclemency of the weather, and getting very wet in my feet in October last; the consequence, however, was a very severe rheumatick attack in my right shoullder, the pain of which was equal to that of the Gout during a fortnight; and was effectually removed by two blisters. This attack was followed by a slight appearance of Gout in my left hand, which lasted two or three days.

Since this, my health has been more

\* From the use of the distilled water, but a third from the last paroxysm.

confirmed than ever. My appetite is now quite restored, and is indeed better than I ever before possessed.

My head is quite well; I feel only some slight uneasy sensations occasionally in my tongue, if I catch cold.

The only inconvenience I now feel is a torpor of the bowels, which is still considerable. I have found for these three months past my inclination to wine greatly abated; in consequence of which, I have reduced my pint of wine to three glasses, and I think, without inconvenience, I could do without that.

Adieu, ever yours,

London,                      CHARLES GORING.  
March 18, 1805.

This minute and faithful account requires little comment. I may be allowed to observe, that some of the facts related cannot, by any distortion of scepticism or

prejudice, be attributed to accident, or to any other cause, than that assigned by the relator. Paroxysms of Gout, indeed, will occasionally have irregularities in their intervals; and they have been kept off by internal medicines, though almost always, eventually, to the great detriment of the patient. But in the example before us, the restoration of the flexibility of the ancles, the disappearance of the cutaneous eruption, the slow and gradual cure of the diseased condition of the tongue, and of the affection of the head, and, finally, the complete restoration of the appetite, but not till after the course had been followed for fourteen months at least; all these phenomena wholly exclude the suspicion of delusion from any source whatever, and irresistibly impress the mind with the conviction, that the cure of this *opprobrium medicorum* is no longer hidden in "the well of Democritus," where our honest SYDENHAM hath placed it, but is to be found in the most simple practice, that can be devised.



But I do not regard the Gout of this gentleman as cured. As in the case of Mr. M——s's headaches, (page 79) I consider the paroxysms to be suppressed, but the diathesis not as yet to be eradicated. Still a little excess in wine, exposure to cold, and other causes are apt to bring on gouty pains, which last for a day or two, and then disappear. If the diathesis, which lays the foundation of Gout, can be eradicated entirely in three years, the practice, I think, will fully answer every reasonable expectation.

After the distilled water had been used a few months, the ends of all the fingers became tender, and continued so about a twelvemonth. It seems certain then, that, in Gout the extremities are habitually and permanently diseased; that from habit this condition of the extremities is unattended by sensation, but that it excites sensation, when the sensibility of the system is increased, or new habits are formed.

The disrelish for wine, which the use of pure water causes, is strongly exemplified in this case. Mr. G—— has been, in the younger part of life, a very free liver, and latterly by no means abstemious in the use of wine. No one, who knows the state of atony and languor, which oppressed him, and the frequent attacks of Gout in the stomach, to which he was subject a year and a half ago, can doubt that, had he tried to practice the same abstemiousness at that time, the consequence of the experiment would have been speedy and inevitable death.

As far as a single instance can be allowed to prove any thing, it is proved by this case, that *Dyspepsia*, Gout, Cancer,\*

\* I do not call the disease of the tongue in this case a Cancer, nor do I believe that it would have ever become a Cancer; but for this reason only, because I think death would have been caused by an internal disease, either Apoplexy or Gout in the stomach. Mr. HOME (Observations on Cancer, Case xxiv) relates a history of Cancer of the breast, which did not prove fatal, because the patient was cut off by Consumption. In like manner, in the case

*Lepra*, and *Apoplexy* are all due to the same cause, and that the disposition to

before us, the disposition was cancerous, or at least (which is quite enough for my purpose) it was such, that the powers of the constitution were unequal to the cure. Whether, therefore, it would have ever become strictly cancerous, or not, is a matter of very little moment.

Mr. HOME, in his *Observations*, having treated of Cancer as a surgical disease only, I do not think right to examine his opinions, or those adopted by him from Mr. HUNTER, though they seem very open to criticism. But it is extraordinary, that Mr. HOME should have rested a point of the first practical importance (the advantages of an early operation) rather upon insinuation than evidence; and should have cited the testimony of Mr. NOOTH in its favour, instead of giving the result of his own experience. NOOTH has said, “ that in one hundred and two scirrhus  
“ cases, in the early stage of the disease, where I per-  
“ formed the operation by the single incision, all remained  
“ free from any return of the complaint.” (NOOTH’s *Ob-*  
*servations on Cancer*, p. 83.) HILL, of Dumfries, too,  
more than half a century ago, stated, that of forty-five  
scirrhus tumours extirpated by him, five only had a re-  
turn of the disease. But Dr. MONRO, about the same time  
asserted, that “ of near sixty Cancers, which he had been  
“ present at the extirpation of, only four patients re-  
“ mained free of the disease for two years.” (Edinburgh  
*Medical Essays and Observations*, vol. 5, part 1, p. 346,  
4to edit.) Is the authority of NOOTH superior to that of  
HILL? Is the testimony of one, who has gravely given  
such a history, as that of his sixth case, in support of his  
principles, of any weight at all?

them may be eradicated by the same method. There is hardly indeed a chronic disease, with which Gout is not connected as a consequence, as a concomitant, or as a precursor.

If we maturely reflect on the authentic histories, which have been delivered of the utility of the milk diet, we must be led to the same conclusions. For they are not consumptive cases only, in which this diet has shown its efficacy, or those attended with hectic fever; but in general it has been found to possess great power in diseases of the most opposite descriptions. The ability of the stomach to digest it seems to form the only limit to its utility. Its use in *Phthisis*, *Hæmoptysis*, *Empyema*, and all diseases attended with a slow fever, and wasting of the flesh, has been celebrated in all ages. In articular diseases, Gout, Rheumatism and Sciatica, it has shown similar power. In spasmodic pains of the stomach and intestines, in hypochondriacal and hysterical affections, even

in maniacal and melancholic diseases, its virtues have been testified by writers of the highest reputation. Epilepsies and other convulsive diseases, the train of symptoms denominated scorbutic, herpetic eruptions, and other desecations of the skin have been sometimes cured, sometimes and more often palliated by the same regimen\*. It would seem then, that there is some connecting link between all these different affections; that they all participate of a common nature, and, if to be subdued at all, that it must be done by a common regimen.

The affinity between Gout and Calculus† is so well established, that there will be little hesitation in admitting, that a regimen, which can eradicate the one, will most probably be eminently useful in the

\* See HOFFMANNI Opera, tom. vi. De mirab. Last. Asin. Us. for authorities on this subject.

† The connection between these diseases is much insisted upon by DE HAEN, and illustrated by some striking examples. See DE HAEN, Rat. Medend. vol. ii. p. 75, &c.



other. And yet some of the gravest medical writers have pronounced, that the formation of calculous concretions is wholly unconnected with the qualities of common water. These concretions, say they, are almost entirely of an animal nature; whereas common water is contaminated only by saline and earthy matter. Even the candid and observant HEBERDEN has supported this delusive fallacy\*. I hope presently to demonstrate how unsound the foundation is, on which it is built. The most familiar and well known facts should have occasioned them to suspect their ignorance, and to be less confident in their conclusions. Every seaman knows, that common water putrifies, nay, that after it has become sweet and palatable, it will ferment a second or a third time, when transported into southern latitudes. This cannot be occasioned by the saline or earthy particles it may contain, but to an impregnation of animal or vegetable matter.

\* Medical Transactions, vol. i. page 6.

Calculous complaints are far more frequent in some situations, than in others; and in certain districts they seem endemical. Add to this, that the pure natural springs have been always celebrated for the relief they have afforded in these disorders, and other complaints of the urinary organs. I happen to know, that a lady has at this present time fixed her residence at Malvern (greatly against her inclination), having found relief there in a complaint of this nature, which was insupportable in other places. Common water, therefore, increases the acrimony of the urine, which may be presumed to lay the foundation of diseases of the urinary organs. This condition of the urine must increase the secretion of *mucus* from the membranes; which secretion, if we may confide in the theory proposed and supported with great ability by Dr. AUSTIN\*, is the origin of urinary *calculi*.

\* See Dr. AUSTIN's Treatise on the Origin and Component Parts of the Stone in the Urinary Bladder.

Before I conclude I cannot avoid making one reflection on the phenomena of disease; it may seem humiliating to professional pride, but if it tend to promote rational indications in practice, truth must not be sacrificed to vain and unwarranted pretensions. We see and acknowledge in Gout, that the cure is really performed by nature, whilst the disease is probably a creature of art. What is obviously true in this disease, may it not be equally true in many others? In inflammatory fevers for instance, is not the real disease of the system formed previous to the evident attack, and are not the inflammation and fever the processes of restoration, as far as restoration is possible? Further, are not many symptoms of chronic diseases, the effects of that wonderful power inherent in the system, of accommodating itself, as far as possible, to the necessities of the present situation?

In some of the forms of Scrophula, I

think the truth of this account is extremely obvious. We say, that Scrophula attacks principally the ends of the bones. It seems inexplicable that a general disease, be it from a poison or from any other source, should have this predilection, as it were, for one part of the bone more than another. But let us consider, that the gravity of the limbs is sustained by two forces, 1st, by the tone of the muscles, and 2dly, by the strength of the ligaments attached to the joints. In a deep Scrophula, the tone of the muscles is gradually more and more impaired. Hence there is an unnatural tension perpetually acting on the joints, and nature (to use the shortest language) attempts to strengthen the joint by enlarging the connecting surface. This is the foundation of those thick and gummy joints, which are known to be a sign of weakness, but which are a succedaneum to a healthy tone of the muscular fibres. But this power of accommodation has necessarily its limits; and if carried too far,

degenerates into disease. In a scrophulous joint the intention of nature is evident, but the power of effecting her purpose is destroyed.

Nature never appears more to contradict her own designs, than when she thickens and obfuscates the cornea of the eye, or destroys the transparency of the crystalline lens. But even in this deviation from the healthy structure, some marks of design and of accommodation to necessity may be discerned. For it is curious to remark, that in cases of total blindness, the eyelids often continue closed as if to exclude the light; and it has happened, when a membrane of this kind has been artificially removed, that the impression of light upon the nerve has been intolerable. Does not this plainly shew, that in such a case the original disease is in the preternatural sensibility of the nerve, and that the thickening of the membranes is merely an effect of the morbid condition of the sensorium, and an effort of nature



to adapt the quantity of light to the sensibility of the sensorium? It would seem then, that if it be in our power to remove this morbid sensibility, the membranes would of themselves recover their transparency.

If it be supposed, that in ascribing such multifarious and even opposite effects to the agency of one matter, I transgress the just rules of philosophizing, and attribute consequences to the production of which no single agent is adequate, I answer, that, on the contrary, an apparent variety in effect is quite consistent with uniformity of cause. If one ball impinge upon another, motion either progressive or retrograde, or, in some cases, absolute rest may be the result. Phenomena are the result of the relation between the agents and the substances acted upon. Though the agent therefore be one, the relation may be indefinitely modified. Hence original and intrinsic varieties in the animal system will produce correspondent varieties in

diseases, though the morbid force be supposed uniform. In the human system we see united to common and generic resemblances innumerable differences likewise, so that every individual has his characteristic peculiarities. Thus, there are differences of the digestive powers, differences in the oxygenizing powers, differences in the fecerning powers, differences, infinite in degree and in number, in the multifarious processes, which are perpetually carried on in that most complicated and most wonderful of machines, an animal body. In health these differences lay the foundation of those diversities, in the form and properties of the species, which are described by the doctrine of temperaments; an arrangement, which marks with tolerable precision the stronger and bolder features, by which the principal varieties of the human race are characterised, though hardly an individual coincides entirely with the archetype, or aggregate of ideas affixed to the general term. These differences are ob-

viously original and connate; they appear in the earliest stages of life, but are more striking and palpable in the progress of life. Thus we see in large families, children brought up precisely in the same manner with different and opposite constitutional temperaments. As, therefore, in health, the radical varieties of the sensorium and important organs produce such marked and unequivocal varieties of temperament, that the forms of disease should be subject to corresponding varieties, seems conformable to the analogy of nature, rather than to be a matter of objection or astonishment.

Much of real and serious disease is not an object of medicine, strictly speaking. Imperfections and irregularities in the growth of parts, defects of the organs of sensation, disproportion between the moving powers of the body and the resistances, are obvious examples of such disease. But the tendencies of nature are so clearly directed to the most perfect proportion and

fymmetry, and in most of her processes the means are adapted to the ends with such profound and unfathomable wisdom, that we cannot but suspect that, where she fails, it must be the effect of extrinsic and insuperable violence. To remove this artificial violence by artificial correctives is, in truth, to re-establish the empire of nature. It may be expected that under a system of diet, which would be truly preventive (if such a system can be completely attained), these imperfections would gradually become extinct, and the human form would spontaneously assume the best possible proportions, would be furnished with senses precisely adapted to the physical situation, and endowed with powers completely adequate to the necessities of the species.

The branch of medicine, which professes to teach the prevention of diseases (the antients called it *Hygieinè*), though doubtless of great interest to the physician, is of still greater to the philosopher, to

the philanthropist, and to the citizen of the world.

To improve the physical man, is to improve also the intellectual and the moral man. Under our present system, man being morbid in his organization, he becomes, by the laws of an eternal necessity, morbid in his understanding and in his will. Hence, from the very frame of his nature, the germs of his vices, as well as of his virtues, are implanted in the first rudiments of his existence, and are developed by the inevitable force of circumstances. Laws, religion, political institutions, and, above all, moral education, may cultivate his virtuous tendencies and correct his perverse propensities; but the experience of all ages, and of all countries, has too clearly proved, that they can do this but very imperfectly. All communities have, therefore, been essentially immoral, and must ever be so, whilst the habits of the individuals composing them remain unaltered. To eradicate moral evil, the



very nature of man must be changed. He must be rendered superior to artificial wants, or rather the objects of them must cease entirely to excite desire. But I wander far from my object. The hint, which I have given, will be readily taken, and its consequences pursued, by those truly good and zealous parents, who think no trouble thrown away, which may secure to their offspring the only true blessings of life, a healthy body, a sound understanding, and pure morals.

## EXPERIMENTS.

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### 1. *PROPERTIES of ARSENICATED MANGANESE.*

I BELIEVE that Arsenicated Manganese has been very slightly examined by the chemists. A very few experiments have been made upon it by the celebrated SCHEELÉ; who, in his experiments upon Arsenic, has said, that the compound may be resolved into its constituent principles by fusion with charcoal. He precipitated neutral arsenical salts, by adding to them solutions of Manganese in the mineral acids. These precipitates, which are Arseniat of Manganese, were distilled in such a heat that the retort at last melted, but no Arsenic was sublimed, nor would they enter into fusion, but retained their white colour; however, he adds, when

mixed with charcoal powder in a crucible they flowed, and regulus of Arsenic arose in the form of vapour, while the Manganese remained behind.\*

I have not been able to verify this experiment: on the contrary, I have made very numerous trials to separate the Arsenic from this compound, but hitherto to no purpose. I believe this admirable chemist was deceived by the Manganese he employed being contaminated by iron.

### I.

I have used Manganese dissolved in sulphuric acid and crystallized arseniate of potash; a salt in which the arsenic acid predominates. When these solutions are mixed together, a gelatinous precipitate is formed; but if the arsenic acid is completely saturated by the addition of potash, the precipitate is no longer gelatinous, and

\* SCHEELE'S Essays, p. 185.

is much more abundant. This precipitate (A) thoroughlyedulcorated with distilled water, is the matter I have operated upon. (B) For sublimation I have used glass tubes, with a bulb at one extremity, and bent a little above the bulb, so as to form a small retort; such a retort, by a coating of clay and sand, may be readily made to sustain a strong heat.

I must add, that the experiments, I am about to relate, are in a degree exposed to the same objection as those of SCHEELÉ; namely, that the Manganese was not free from iron. I attempted to purify it, by precipitating the sulphat of Manganese by carbonat of potash, and dissolving theedulcorated precipitate in distilled vinegar. But though I evaporated the solution nearly to dryness twice, I found that some iron still adhered to the Manganese. I suspect also, that the arseniat of potash was contaminated by iron, which is a second source of error. For these reasons I have hardly mentioned the appearances

with precipitants, thinking they cannot be fully depended upon.

## II.

(A) The precipitate (I. A) dissolves in acids like phosphat of lime, and may be separated from them, undecomposed, by saturating the acid. (B) If heated to redness and then dissolved in muriatic acid, the acid becomes oxygenated, and of the red colour imparted by Manganese, if iron be abundant; but if there be little iron, the solution is hardly coloured, and if the Manganese be pure, I believe the solution would be quite colourless\*. Hence the union of Manganese with arsenic acid, does not prevent the oxygenation of the Manganese by heat.

## III.

Into a coated tube (I. B) I introduced a little of the precipitate (I. A) mixed with

\* See the note to p. 238.



charcoal powder. When red hot, not the smallest arsenical odour could be perceived, but (A) a matter of a metallic appearance was found sublimed in the tube. It retains its metallic splendor permanently, is insoluble in muriatic acid, and therefore is not arsenic, nor have I precisely ascertained its nature. This sublimate certainly contains sulphur, but from whence it is derived I cannot conjecture. The neck of the tube had received a blue stain\*, as far as it had sustained a red heat, which is indelible by acids.

#### IV.

(A) I mixed arseniat of Manganese (I. A) with charcoal powder, and made it red hot in a crucible. (B) After all the charcoal had been burnt off, I mixed the

\* Sometimes this stain is of an ash colour, but at the extremity, the farthest from the bulb, it is always blue. SCHEELE uniformly observed indelible stains of various colours in his experiments with arsenic acid, and the different metals.

residuum\* in the crucible with some more charcoal powder, and treated a little of it in a tube as in (III). Some metallic sublimate rose into the tube, but without any arsenical odour, and the neck of the tube had a blue stain. (C) I therefore mixed the residuum (B) again with charcoal, heated it strongly, and again burnt off the charcoal. (D) Now a little of the residuum, treated as in (III), yielded no metallic sublimate, but still the neck of the tube received a deep blue tinge.

## V.

(A) I digested arseniat of Manganese in a solution of potash for many days. The alkaline solution was evaporated to dryness, mixed with charcoal powder, and made

This residuum in my experiments was yellow. But I have seen an arseniat of Manganese, which, after being heated with charcoal, continued perfectly white. I attempted to form a similar arseniat, by using the same Manganese even purified, but failed, I suppose by the imperfection of my arseniat of potash. I believe there is also an arseniat of Manganese, which is soluble in water.

red hot in a tube. The neck of the tube first received a deep blue stain; in a stronger heat a shining substance sublimed; it was not arsenic, but the compound matter described (III. A.) No arsenical odour was emitted. We see therefore, that potash will not separate the arsenic acid from Manganese; but dissolves a little of the compound. (B) Common carbonat of potash, likewise, does not decompose the precipitate (I. A.) when strongly heated with it, but dissolves it plentifully.

## VI.

(A) Arseniat of Manganese was mixed with an equal weight of muriat of ammonia, and exposed to a strong red heat. Ammonia escaped (as was evident, when the experiment was made in a tube) and the arseniat was in part converted into a matter which, where the air had not acted upon it, was of a shining metallic appearance. (B) When the experiment is made in a tube, this matter rises

into the tube in the form of a black powder lining the tube, mixed with muriat of ammonia.

(C) A deliquescent salt was also formed, which had the properties of muriat of Manganese mixed with some arsenic acid. 1. Prussiat of potash precipitated this salt white. 2. Tincture of galls and sulphurated hydrogen had little or no effect. 3. Cuprat of ammonia was also precipitated, which is occasioned by the arsenic acid.

## VII.

The residuum (IV. B) treated in the same way with muriat of ammonia, shows the same appearances. A part of the residuum undergoes a species of reduction\*, and another part is converted into a saline matter.

\* In one example (where the experiment was very well done in a tube, by a strong heat being suddenly applied) the black powder (VI. D) rose in the tube, and there was, besides, a complete reduction of metal, in grains, in the bulb, mixed with the deliquescent salt.

It is not difficult to see the cause of this sort of reduction. Both arsenic acid and Manganese (if in the condition of black oxyd) decompose ammonia. The arsenic acid being changed into arsenious acid, or perhaps into an oxyd, fuses with the Manganese, and gives this shining metallic appearance. The muriatic acid unites with another portion of the Manganese, and makes the deliquescent salts.

This experiment gives a ready method of distinguishing phosphate of lime from arseniate of Manganese. If phosphate of lime be heated with muriate of ammonia, the muriate sublimes, and the phosphate is left unchanged.

## VIII.

If this residuum (IV. C) be heated to redness with potash, the matter assumes a green colour; but when the potash is dissolved in water, it forms a colourless solution, nor is any thing deposited by keep-



ing the liquor exposed to the atmosphere. But by the use of due reagents, it may be proved that some metallic matter is retained in the alkaline solution.

Potash heated with phosphat of Manganese also becomes blue, and does not impart its blue colour to water.

## IX.

(A) If a little of the residuum (IV. B), mixed with charcoal powder, be put between two plates of copper, and the plates be made of a low red heat, the copper receives a permanent stain. The internal parts of this stain are partly of an orange, and partly of a crimson colour\*; the external are of a whitish yellow, like that caused by pure arsenic, except that the tinge is more yellow.

(B) The residuum (IV. C) was treated in

\* These colours are chiefly from the oxidation of the copper.

the same manner. In this case, a crimson spot was formed in the middle of the stain: the internal part was dark, but the external had the same whitish yellow colour as in the last experiment.

## X.

From these experiments it is proved,  
1. That Manganese and Arsenic cannot be separated by the action of inflammable matter (III); nor by alkali (V)\*; that an arsenicated Manganese may be made, from which nothing can be sublimed (IV. D); that this compound may be distinguished by the small quantity of semi-volatile matter, which makes an indelible blue stain on glass (ib.); by the blue colour, imparted to potash by heat, not being communicated to water (VIII); by the oxygenation of the muriatic acid (II. B); by the arsenical stain impressed

\* I have made a great many other attempts to decompose arsenicated Manganese; but as they were uniformly unsuccessful, I think it needless to relate them.

upon copper (IX. A and B); by the species of reduction produced, and by the salts formed by heating it with muriat of ammonia (VI. and VII).

I proceed now to show, that all these phenomena may be imitated by the ashes left after the combustion of animal matter.

2. *PROPERTIES of the ASHES of ANIMAL  
MATTER.*

The matter which I have principally examined is the ashes of gelatine. These are said by FOURCROY,\* to consist merely of phosphat of lime, muriat of soda, and muriat of potash. But I hope to prove that they are of a far more complicated composition, and that in addition to these substances, they contain soda, iron, manganese, and arsenic acid.

XI.

(A) I burned some common glue to ashes. (B) Distilled water, in which these ashes had been macerated, changed the colour of paper tinged by turmeric. (C) I dissolved the ashes in muriatic acid, which was done with much effervescence, and nothing remained undissolved. The solution contained muriat of lime.

\* *Système des Connaissances Chimiques.* Tom. ix. p. 237.

(D) Prussiat of potash yielded prussian blue copiously. These ashes, therefore, contain an alkali, which must be soda, carbonat of lime, and iron.

## XII.

To determine whether these substances might not be accidental, I made some gelatine, taking every precaution to avoid accidental impurity. I used for the purpose the flesh of veal, steeping it in cold water as long as it tinged the water, and making the jelly with distilled water. I reduced this jelly to ashes, but found this species of gelatine considerably different from common glue. The coal was more difficult of incineration, so that, though a strong and long continued heat had been employed, the ashes were not throughout perfectly white: the quantity also was much smaller than that obtained from the same quantity of glue\*. (A) These ashes

\* This, however, is owing in part to the impurities of common glue.



shewed the same signs of soda, as the ashes of glue (XI. B). (B) They dissolved in muriatic acid without effervescence. The carbonat of lime is therefore accidental. (C) I added ammonia to the muriatic solution, till a white cloud appeared. Prussiat of potash now caused a slight discolouration, and a very minute green precipitate fell in twenty-four hours. Whether this trace of iron might have been from some blood, which had escaped the action of the cold water, I cannot determine. But, doubtless, the precipitate (XI. D) was principally from accidental impurity. (D) Paper stained by litmus put into the solution, after the addition of the ammonia, was not reddened, but the colour was destroyed.

### XIII.

(A) To get rid therefore of these impurities, I dissolved some ashes of glue in muriatic acid, precipitated the iron by prussiat of potash, and saturated the su-

perfluous acid with ammonia. A precipitate (B) was now formed of a gelatinous consistence, and subsiding very slowly to the bottom of the glass. It was collected on a filter,edulcorated and dried. (C) A little dissolved in muriatic acid, like phosphat of lime. (D) Prussiat of potash had no effect on the solution when diluted; but after it had been reduced by evaporation, prussiat of potash made a white precipitate.

#### XIV.

(A) The precipitate (XIII. B) was mixed with an equal weight of muriat of ammonia, and exposed to a strong heat in a tube (I. B). There was sublimed (B) a matter nearly of the colour of orpiment, mixed with muriat of ammonia. In the bulb of the tube was found a substance (C) which seemed to have undergone fusion, light, and of a shining metallic appearance. (D) There was also a powder, mixed (E) with a deliquescent salt.

## XV.

(A) The same sort of matter of the colour of orpiment (XIV. B) may be more readily obtained by subliming equal parts of the ashes of glue and muriat of ammonia, taking care that the process be conducted so, that the air shall not enter the vessel. In this case, the ashes undergo a sort of reduction, being blackened throughout. If the air have access, the yellow colour is destroyed, and there is a smell of sulphurous acid. The ashes too are no longer black, but of their original colour. (B) This matter (XIV. B) contains sulphur, as is readily shown by heating it and a substance acidifiable by nitric acid; which, however, is not arsenic acid, for it does not deliquesce, and no arsenic could be obtained from it.

## XVI.

(A) The powder (XIV. D) was insoluble in water and in muriatic acid; but the acid took up a little iron from it. (B) The

deliquescent salt was muriatic of lime, mixed with some metallic salt, but which was too minute to be properly examined.

We see clearly by these experiments, that though the ashes of gelatine contain lime, they resemble phosphat of lime only in this respect, and in the property of dissolving without effervescence in muriatic acid. By the following process an ash may be prepared from the coal of gelatine, which is even without this property, and which contains not a particle of phosphat of lime, unless it be in a state of combination hitherto unobserved.

## XVII.

(A) Some common glue was exposed to heat in an open crucible, till all its volatile parts were expelled, and it was reduced to a light, voluminous, and porous coal. This was pulverised, covered to the depth of an inch or two with sulphuric acid (undiluted) and kept for some time heated

nearly to the boiling point. A large quantity of sulphurous acid was disengaged, and the sulphuric acid became black and opaque. By affusion of water, a black sediment was formed, which was collected on a filter. (B) This sediment requires a strong heat for its calcination, burns with a purple flame, and is reduced to white ash, which (1) is insoluble in muriatic acid; but (2) sulphuric acid (undiluted) dissolves it even when cold, and more readily by heat. It cannot then be phosphat of lime.

## XVIII.

(A) This ash (XVII. B) was heated to redness in a silver crucible, with some pure potash. (B) The potash became blue, but by dissolving it in water, the colour was destroyed, and the solution was limpid. (C) The solution (B) deposited crystals by standing, which were soluble in muriatic acid. (D) By saturating the potash with muriatic acid, a precipitate was formed, which an excess of acid redissolved.



## XIX.

(A) A white powder remained, which escaped the action of potash. (B) This powder dissolved readily in muriatic acid, with a very slight effervescence. (C) Heated to redness, it suffered no change in its appearance; but if muriatic acid be now added to it, the acid becomes oxygenated, as is evident by the smell it acquires, and the powder is dissolved, as before. (D) If either of the solutions (B and C) are diluted with water, they become immediately turbid, and a small quantity of precipitate is gradually deposited.

## XX.

Some of the powder (XIX. A) was heated with charcoal in a tube. No metal sublimed, and nothing was found in the bulb of the tube, but a black powder. But the neck of the tube had received an indelible blue stain, as far as it had sustained a red heat.

## XXI.

(A) Some of the powder (XIX. A) was heated strongly with an equal weight of muriat of ammonia in a little open crucible. (B) Some metallic salts are produced, for prussiat of potash caused a precipitate of a fine pink colour, but the far greater part underwent a species of reduction; being changed into a matter (C) black and shining, where not exposed to the air. (D) Muriatic acid did not dissolve this matter, but extracted from it a little iron.

## XXII.

A little of the same powder, mixed with charcoal, was heated between two plates of copper. The copper received a stain entirely similar to that produced by arsenicated manganese, treated in the same way. Internally the stain was dark mixed with crimson spots. Externally it in no respect differs from those described

(IX. A and B), being similar to that produced by pure arsenic, except that it is of a yellower colour. The only difference in the effect is, that the composition of the animal ash defends the copper, where it is in contact with the metal; so that these stains appear only round this point of contact, a part of the ash being semi-volatilized by the heat.

### XXIII.

An ash with similar properties may be made from other sorts of animal matter. (A) Some fibrine, prepared from muscular flesh, had been burnt to a coal, which was exposed to a strong heat for several days. Part of it was reduced to a white ash, but a great deal of it retained the blackness of the coal. I therefore treated it with sulphuric acid, as the coal of gelatine. (B) A small quantity of sulphurous acid was produced, the white ashes were dissolved, and a quantity of black matter was collected. (C) This

matter could not be whitened by heat; but (D) treated it with potash, it was converted into two portions: 1st, a powder soluble in muriatic acid, which by dilution with water yielded a precipitate, and which seemed to be precisely the same as the powder (XIX. A); 2dly, a black insoluble powder. I have treated this with muriat of ammonia (as at XXI). The muriat was sublimed, and the black powder remained unchanged.

#### XXIV.

From these experiments it is obvious, that the ashes of gelatine contain soda (XII. A), iron (XVI. A, and XXI. D), and manganese (XII. D, XIII. D, and XVIII. B). That the manganese is united with arsenic acid, is proved by these ashes possessing every property of that compound. They form an indelible blue stain on the glass tube (XX.); they impart a blue colour to potash, which is not communicated to the watery solution (XVIII.

B); they oxygenate muriatic acid (XII. D. and XIX. C); they impart true arsenical stains to plates of copper (XXII); heated strongly with muriat of ammonia, they undergo a species of reduction (XIV. A, XV. A, and XXI. C); and some metallic salts are produced by the same process (XVI. B, and XXI. B).

But, doubtless, a number of experiments, both analytical and synthetical, are requisite to enable us to understand thoroughly the composition of these substances. What is the lime combined with, which forms an essential part of their composition? What is the iron combined with? What is the insoluble powder (XVI. A)? To what is the precipitation (XIX. D) owing? What is the acid formed in experiment (XV. B)?

The solution of these questions, and perhaps of many others, which may have escaped my observation, must be left as subjects of future inquiry.



*3. On the PROPERTIES of WATER.*

Having proved, as I believe, incontrovertibly, that arsenical matter is an essential ingredient of animal substances, and consequently of vegetable substances also, from which the animal are derived, it can be readily conceived that in certain stages of decomposition, or by certain modifications of the constituent principles of these substances, matter may be formed, which shall prove poisonous to the human system. What are these modifications is a question to be determined rather by medical observation, than by chemical experiment. Taking for granted, that the water in common use is contaminated by matter of this kind, we see how it is possible, that the use of such water may become the source of disease: this possibility, I think, is converted into certainty

by the facts related in the preceding Inquiry. It only remains to shew, that common water is, in fact, tainted by such an impregnation. It can hardly be doubted that, if this taint be found in the specimens, which are submitted to particular examination, the same will be found almost universally. The causes of such a contamination are nearly universal. And, in truth, all common water putrifies and becomes fetid; all common water receives the same empyreumatic taste by distillation; all common water has the same nauseous and offensive taste when warm, acting on the stomach as an emetic. To prove the fact more correctly, can only be done by an examination of particular specimens. That to which I have paid the most attention is the water of the New River. A variety of experiments shew that this water is loaded with matter of the nature of animal matter, and, therefore, derived probably from putrefaction. It may be proved 1. by distillation; 2. by

the use of precipitants; 3. by an examination of the residuum, left after evaporation.

### XXV. *Distillation.*

(A) By simple distillation, ammonia (united probably with carbonic acid) may be separated from New River water. For the water, which first rises by distillation, becomes cloudy by adding a clear solution of acetite of lead; this cloud is dissolved by distilled vinegar, or pure nitric acid, whereas, the deposit made by acetite of lead in common water is insoluble by acids. I need hardly add, that ammonia is a product only of animal and vegetable matter.

### XXVI. *Precipitants.*

(A) I added a solution of acetite of lead to some New River water, and collected the precipitate. (B) This I mixed with carbonat of potash, and exposed to

a heat strong enough to melt the potash. By this process a great quantity of lead was reduced.

This precipitate (A) is commonly deemed to be sulphat of lead, and the acetite is used as a test of sulphuric acid. Were this the case, no lead would be reduced by mere fusion with potash. This precipitate must contain then some inflammable matter, and may take place, though there is not a particle of sulphuric acid in the water.

I have tried the same experiment with a similar precipitate from many other common waters, with the same result; and believe it will be found universally true, when the precipitate has been recently made. I have met with one which, having been kept a year and an half, yielded no reduced lead; but I suspect this to have been owing to a change produced in it by the atmosphere.

## XXVII.

If the potash used in the last experiment (XXVI. B) be saturated with muriatic acid, some prussian blue is separated. Therefore, the precipitate (XXVI. A) contains iron and prussic acid; the last which is almost peculiar to animal matter.

## XXVIII.

Other metallic salts yield precipitates from New River water. (A) Sulphat of copper makes a very copious green precipitate. (B) This precipitate dissolves in muriatic acid, and may be separated by an alkali, before the muriatic acid is saturated. The calx of copper is, therefore, united with some matter contained in the water. Salts of copper are known to precipitate some kinds of animal matter.

## XXIX.

Solution of tan also acts upon this



water. If some New River water be evaporated nearly to dryness, a solution of tan makes the residuary water turbid, and some white matter gradually subsides. The liquor assumes a dark and bluish colour. Tan, as far as has been hitherto observed, precipitates nothing but substances produced from animal matter.

### XXX. *Examination of the Residuum.*

By the residuum I understand the matter deposited by evaporating the water. (A) Heat a little of this residuum of New River water between two plates of copper, till the plates are red. A white stain, resembling that caused by arsenic, will be found on the plates. (B) I boiled some of the same residuum with a little pure potash. By this process it gave a smell of ammonia, and the same was made evident by exposing the liquor to the vapour of muriatic acid. (C) I mixed some of the residuum, collected from the water of a pump, with liquid phosphoric acid,

dried it by heat in an open vessel, and then introduced it into a coated glass tube. After a red heat had been applied, a transparent, colourless and glutinous matter was found sticking in drops to the inside of the tube. The tube had the smell of the oil, arising from animal substances by distillation. I think it not improbable, that this glutinous matter is the substance which gives the hardness to pump water.

## XXXI.

(A) I exposed a quantity of the residuum of New River water to a red heat, in a small coated glass retort. There first arose a little liquid ammonia; afterwards, a large quantity of gas was produced, and as soon as the gas appeared, there was no more ammonia. The gas was a mixture of carbonated hydrogen and azote; for, towards the end of the process, it was hardly inflammable, but it still instantly extinguished the flame of a candle. I could perceive no vestige of carbonic acid.

(B) When no more gaz was produced, the colour of the residuum, which was an ash, was changed to black, if the external air has had no access to it. Here again we find a resemblance between a portion of this residuum and animal substances; as they yield similar gazes by distillation, and are changed by this process into a species of coal. (C) I have submitted residuary matter, left by other waters, to destructive distillation, and have found the same signs of a matter resembling in its products animal matter, though the water was from country situations. They yielded large quantities of fetid gaz, ammonia, some a little muriat of ammonia, and small quantities of matter with the smell of fetid oil. In one instance an acid rose, which deliquesced. The residuum was blackened, and I have once seen, when using an open crucible, coruscations of light, as if from the production and inflammation of phosphorus.

## XXXII.

(A) The blackened residuum (XXXI. B) was digested in muriatic acid, which dissolved a large quantity of carbonat of lime, and took up also a good deal of iron. (B) There remained a very fine, smooth, and insoluble black sediment.

## XXXIII.

(A) The sediment (XXXII. B) was exposed to a red heat in an open crucible. By this process it was changed into a matter appearing like earth. (B) This earth was digested and boiled in muriatic acid, but the acid did not dissolve it, but only separated from it a little iron. (C) After the earthy matter had been freed from the acid, I exposed it to a red heat with potash in a silver crucible. The potash dissolved a large quantity of the compound; by saturating it with an acid, the matter dissolved was precipitated, and proved to be silica. Some other matter perhaps

was taken up by the potash, which could not be separated by this process; but I have not ascertained the truth of this suspicion.

#### XXXIV.

(A) A part of this compound (XXXIII. A) was not acted upon by the potash. A matter was left untouched, which proved to be the same as that obtained from gelatine, which has been before particularly described. (B) Mixed with charcoal and heated between plates of copper, it stains the plates, nor is it possible to distinguish this stain from that caused by pure white arsenic, treated in the same manner. (C) It dissolves in muriatic acid with a slight effervescence, the solution becomes turbid by diluting it with water, and a white precipitate gradually falls. Sulphuric acid has no effect on this matter. Nitric acid dissolves it; this solution is not precipitated by the addition of water\*.

\* This treatment of the residuum of water, is by far the easiest method of obtaining this arsenical substance,



## XXXV.

(A) The retort in which the residuum had been heated, received a deep blue stain, indelible by acids, where it had undergone a red heat. The same stain is formed by any animal substance, exposed to destructive distillation. All animal matter, by this process, gives out a black fetid oil. (B) I introduced a little of this oil into a tube, which I softened by the fire, just so much as to be able to seal it hermetically. Thus the oil was driven from that part of the tube which had been heated, and left behind it a fine blue stain, which seems to be exactly the same as that caused by the residuum, and that made by arseniat of manganese (IV. D). Though

(which enters probably into the composition of all animal matter) in sufficient abundance for a thorough examination of all its habitudes. An ounce or two of the residuum will yield enough. What I got was from a very small quantity of the black sediment (XXXII. B), the greater part having been consumed, before I understood its nature; and the time for publication not admitting the delay of procuring more.

acids do not destroy this stain, they have some effect upon it. (C) Muriatic acid takes up a little, as may be readily shown by proper precipitants. If the stained glass be kept in contact with oxymuriatic acid, smell of the acid is destroyed. Cuprat of ammonia, added to the liquor, occasions a copious green precipitate.

Thus we have an accumulation of evidence, that the water of the New River, unquestionably, and, probably, almost all that is applied to domestic uses in populous and cultivated countries, is tainted by a matter partaking of the properties of animal matter, and, in particular, by that peculiar substance, which being of an arsenical nature, may be readily supposed to act as a poison on the human frame. I am sensible that every branch of this investigation is exceedingly defective; for this, I trust, the very complicated nature of the substances to be examined, and the absence of guides to direct my steps in this intricate path, will be accepted as a sufficient apology.

## APPENDIX.

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THIS Inquiry has been delayed beyond the time at which I had hoped to give it to the public, partly by the unsettled state of the printing business, and partly by my own wish to diminish its imperfections. But I hardly regret this circumstance, since it enables me to give a more satisfactory account of the case of Mrs. J——s, the patient labouring under Cancer of the breast. It will appear, from the following letter, (written by a professional gentleman, very competent to form a correct judgment of her situation,) that all apprehension for her immediate safety is removed; and that I am still further warranted in the opinion I have ventured to deliver, that it is in our power to eradicate this disease. The ulcer, however,

it will be obvious, is still a cancerous ulcer, and so I doubt not it will continue to be, till the constitution has undergone a thorough change.

Worcester, March 3d, 1805.

Agreeably to your desire I visited Mrs. J——s, when I was in her neighbourhood, a few days ago, and think you will have reason to be satisfied with the progress she has made. The ulcer under the scirrhus breast is stationary : she thinks it does not spread, nor does it heal ; but the edges are not quite so hard or elevated as they were. The whole breast is still very hard, and the glands in the axilla are much as formerly, but certainly not worse. As to the local complaint then, it may be safely said, that if it does not yield to the plan pursued, its progress is checked by it. But what she is most delighted at, is a very great amendment in the condition of her general health. She has had, I find, for some time past, frequent convulsive attacks. Lately, to her surprize, the intervals be-

tween these attacks have become much longer, and they have been, upon the whole, slighter. She has more appetite, sleeps better, and the strength is improved. Since there is no doubt, that in Cancer a state of the constitution and of the local disease go hand in hand, the former having improved beyond expectation, it may be presumed that the latter has received likewise a proportional amendment.

I am, &c.

DAVID LAMBE.

I am enabled, likewise, to give the following additional testimony of the efficacy of this regimen.

Dear Sir,

Agreeably to your request, I will endeavour to describe, as accurately as I can, the effect of the distilled water upon Mrs. Bodenham. You know that, for many years, she has been a great invalid, without yet having any particular complaint, on



which the faculty could exert their skill; her malady has been, in fact, nothing more than a great deficiency of strength, and an astonishing relaxation of the whole system. Her digestion has always been bad, whence, I presume, arose almost constant headachs and other bilious feels. Her skin was often tinged with a deep yellow hue, as though she had had the jaundice, and if, by opening medicines, she wished to procure relief, a great, and, sometimes, alarming debility ensued; then, if to endeavour to regain strength, she took any thing calculated to brace and invigorate, costiveness, headach, and fever, were the never failing consequences. She has repeatedly tried Bath, Cheltenham, and sea-bathing, &c. &c. She has followed every reasonable plan, that has, at any time, been laid down to her for her conduct, and has consulted almost every man of eminence that came in her way, but with little or no success.

On the 31st of last October she began

to drink distilled water: with the exception of one or two glasses of port wine, it forms her only beverage, and it has certainly done her great service. That her strength has increased I infer from this circumstance, that an airing to Hereford in the carriage on a morning, (a distance, as you know, of scarcely three miles,) would so far fatigue her, as to render her incapable of doing any thing in the evening; that exertion, at present, does not at all overpower her; she is not, however, yet capable of much walking exercise. The digestion is much improved, and the bilious symptoms have considerably diminished. Her skin has been, for some months, extremely clear from any yellow tinge, and when she awakes in the morning, she has no longer that wretched lowness and depression of spirits, (which she used to call the horrors,) accompanied with a little low fever, which she could never get rid of, but by immediately quitting her bed. Her sleep is more comfortable and more refreshing; her spirits are improved, and she has cer-

tainly, in some degree, recovered her *embonpoint*.

I am, Dear Sir,

Your faithful humble servant,

CHARLES BODENHAM.

Rotherwas, 7th March, 1805.

Another member of this family has likewise received as much benefit from the regimen as the lady, whose case forms the subject of the foregoing letter. I might add many other instances of its utility, some of which have fallen under my own observation, and others which have come to my knowledge. In particular, two patients, in the worst stages of *phthisis pulmonalis*, have been kept upon it the whole of the winter, and the progress has been quite satisfactory. But still their amendment has not, as yet, received that degree of stability, as to justify me in detailing the cases.

## ERRATA.

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Page 23, line 1, dele *composition*.

35, 8, insert *we* after *But*.

63, 8, for *twards*, read *afterwards*.

91, XI, for *acquiriverunt* read *acquisiverunt*.

115, 23, (note) for *exteriorum* read *arterisforum*.

203, 2, for *adematous* read *edematous*.

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